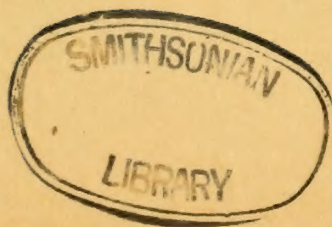




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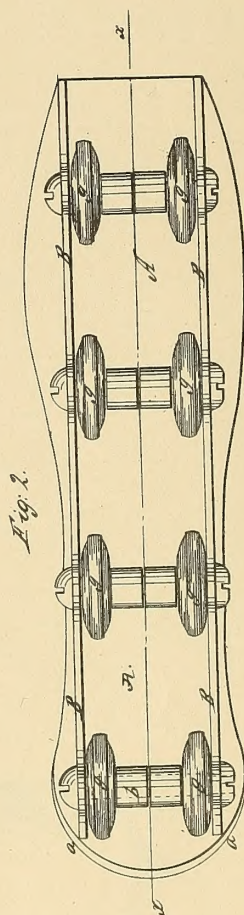
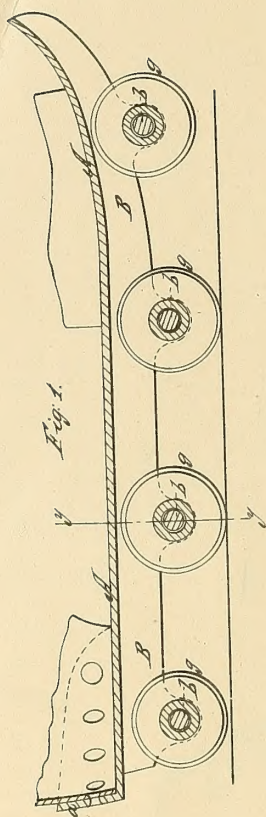
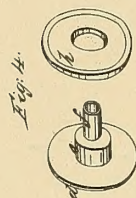
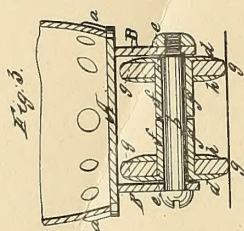
Roller-skate patents/



H. Pennie Parlor Skate.

N^o 3,994.

Patented Apr. 9, 1861.



Witnesses:
Lewis A. Tucker
M. J. Simpson

Inventor:
Henry Pennie

UNITED STATES PATENT OFFICE.

HENRY PENNIE, OF BROOKLYN, NEW YORK.

ROLLER-SKATE.

Specification of Letters Patent No. 31,994, dated April 9, 1861.

To all whom it may concern:

Be it known that I, HENRY PENNIE, of Brooklyn, in the county of Kings and State of New York, have invented a new and
5 Improved Roller-Skate; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in
10 which—

Figure 1, is a longitudinal section through the improved roller skate, taken in the vertical plane indicated by the red line *x, x*, Fig. 2. Fig. 2, is a bottom view of the im-
15 proved skate. Fig. 3, is a transverse section taken in the vertical plane indicated by the red line *y, y*, Fig. 1. Fig. 4, shows in perspective views, the two metal parts which confine a ring of leather in place, to form a
20 roller.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements in skates which have rollers or
25 wheels under them instead of the common metal runner, and which are known as roller, or "parlor, skates," in contradistinction to ice skates.

The object of my invention is to increase
30 the rolling surface laterally without materially increasing the friction thereof, thereby giving the skate a firmer bearing than has been obtained by the employment of a single line of rollers, and enabling the be-
35 ginner in the art of skating, to balance himself and stand on the skates with perfect ease.

It also has for its object a novel mode of applying two sets of rollers to the foot stand,
40 whereby said rollers may be adjusted transversely, and brought nearer together or set farther apart for increasing or diminishing the lateral bearing surface according to the degree of proficiency the person has attained
45 in using the skates.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, is a thin metallic sole plate which is
50 curved up in front so as to conform to the curved surface of the sole of the boot, as shown in Fig. 1 of the drawings, and around the heel part a flange *a*, is formed, which prevents any lateral or backward movement
55 of the heel of the boot when the skate is strapped thereto.

B, B, are two parallel plates, the upper edges of which are secured in a suitable manner to the bottom of sole plate A. These two plates B, B, extend from the toe to the
60 heel part of sole plate A, and they should be at equal distances from and parallel to a longitudinal line drawn through the center of the skate, as shown by Fig. 2 of the draw-
65 ings. These two parallel plates B, B, together with the plate A, to which they are rigidly secured, or of which they may form a part, constitute the foot stand, or stock, of the skate to which the rollers are applied
70 as will be hereinafter fully explained.

The rollers or small wheels are made of metal, principally, but between the metal
flanges of each wheel a ring of some suitable substance softer than metal, such for in-
75 stance as leather, hard rubber, or even wood, is interposed, which ring is somewhat larger in diameter than the metal flanges between
which it is secured, so that a soft and noiseless rolling surface is obtained.

The rollers are all of an equal diameter
80 as shown in Figs. 1, 2, and 3, of the drawings, and they have their bearings on axles *b, b, b, b*, which pass transversely through the lower edges of parallel bearing plates B, B, and receive nuts *c, c, c*, on one of their
85 ends which secure them in their places. The axles *b, b, b*, are not allowed to rotate in their bearings, but the rollers turn loosely on the axles. On each axle *b*, two rollers are placed and every roller should be at an equal
90 distance from the middle of the length of its respective axle, and as all the axles are of the same length there will be two lines or rows of rollers instead of one row or line, as
95 hitherto. It will now be seen that a firm bearing is obtained on each side of the skate from the heel to the toe thereof, which will enable any person to stand on the skates
100 with confidence, as the two sets of rollers will prevent the skates from tipping to one side or the other, and also the involuntary bending of the ankle of the skater, as must frequently occur where one set of rollers is
105 used, particularly with persons who are not well skilled in the use of skates.

I construct the rollers in the following manner: A circular flange portion *d*, is cast
with a hub *e*, and tubular projection *f*, as
shown clearly in Fig. 4 of the drawings. A
110 circular ring *g*, of leather or other suitable substance is slipped on the hub *e*, and a circular flange *h*, of the same diameter as flange

5 d , is now slipped on the hub e , and the two
 metal flanges d , and h , having the ring g ,
 between them are firmly bolted together.
 The interposed substance g , being slightly
 10 larger in diameter than the flanges d , and
 h , it will form the periphery of the roller.
 The rollers are all made in this way, with
 holes through their axes, and as the flanges
 h , can be taken off at pleasure the rings g ,
 15 may be removed when too much worn, and
 new rings substituted. The tubular projec-
 tion f , on each roller is used to increase the
 bearing surface of the roller on the axle
 b, b, b , to prevent these rollers from wearing
 20 loose in consequence of the lateral strain
 which is put upon the rollers in the evolu-
 tions of the skater. These tubes f , also serve
 to keep each pair of rollers at their proper
 distance apart on their axles, to prevent
 25 their working laterally, and the ends of the
 tubes of each pair of rollers will abut in the
 middle of the axles, or washers may be in-
 troduced on the axles between the tubes, if
 the tubes are not long enough.
 30 The axles b, b, b , are each made with a
 button head on one end, and a shoulder
 and a short screw formed on the other end,
 the shoulder abuts against the inside of one
 of the plates B, while the screw end passes
 through this plate and receives a nut which
 35 keeps the axle rigidly in place, as shown in
 Fig. 3, of the drawings.

Now from the foregoing description it
 will be seen that each roller or wheel has
 35 an independent rolling motion on its re-
 spective axle, and that when the two sets or
 rows of rollers are arranged as shown in
 Figs. 1, and 2, of the drawings good bear-
 ing surfaces are obtained not only when the

skater is standing upright, but also when 40
 he is in motion, and as new beginners are
 very apt to strain skates more than those
 who can go through the movements of skat-
 ing with ease and freedom the wide bearing 45
 given to the rolling surface of the improved
 skate will add greatly to the strength of the
 rollers and the parts to which the rollers are
 attached.

The principal objections to the roller
 skates having only a single row of rollers, 50
 is the danger to the learner of the foot be-
 ing suddenly turned on one side, thereby
 causing loss of confidence and frequently
 serious injury to the ankle. In my inven-
 tion not only is the beginner at once assured 55
 of his safety but it also enables the expert
 skater to avail himself of a direct bearing
 on the center of one set of rollers either
 in skating directly forward or in turning in
 a curve, by a slight inclination of the foot. 60

When some proficiency has been obtained
 in using the skates the rollers may be set
 nearer together and finally one set of rollers
 may be used arranged along the center of
 the skate, by using suitable washers placed 65
 on the axles on each side of each roller.

Having thus described my invention, I
 claim as new and desire to secure by Letters
 Patent;

As an improved art of manufacture a 70
 roller skate provided with two rows of tubu-
 lar adjustable rollers and the whole con-
 structed and operating as herein shown and
 described.

HENRY PENNIE.

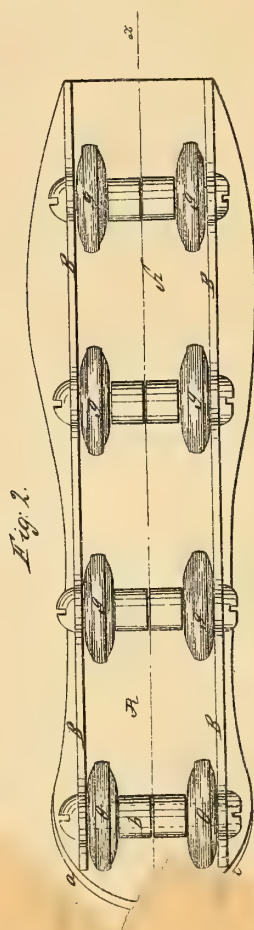
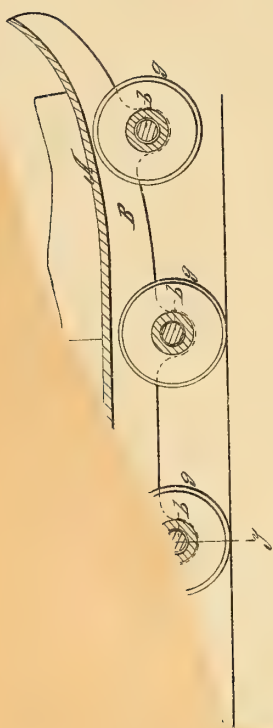
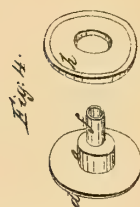
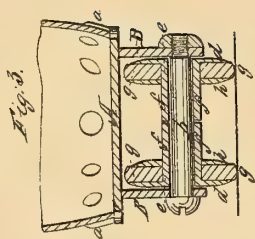
Witnesses:

LEWIS A. TUCKER,
 M. M. LIVINGSTON.

H. Pennie Parlor Skate.

N^o 3,994.

Patented Apr. 9, 1861.



Inventor:

H. Pennie

*A. Anderson,
Parlor Skate,*

No 33,689,

Patented Nov. 12, 1861.

Fig. 1.

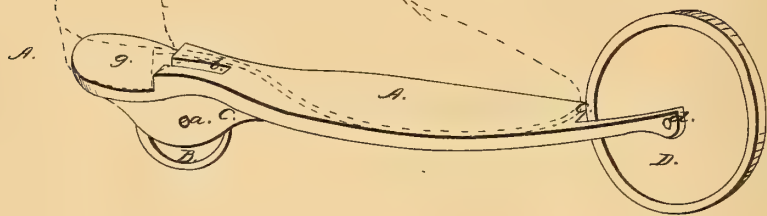
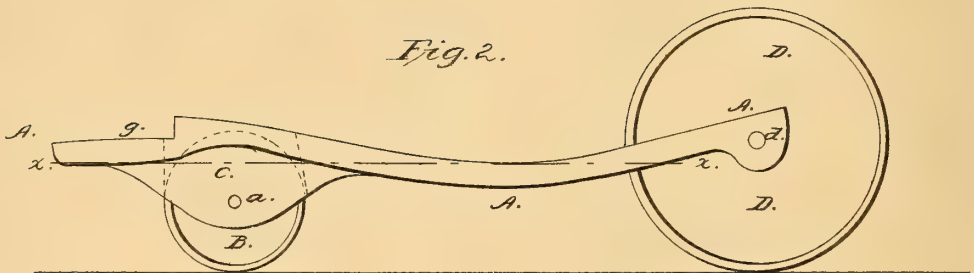


Fig. 2.



*Witnesses:
J. W. Coombs.
R. S. Spencer.*

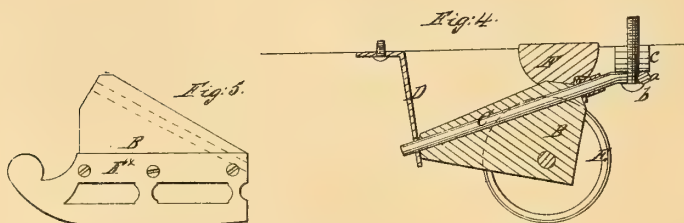
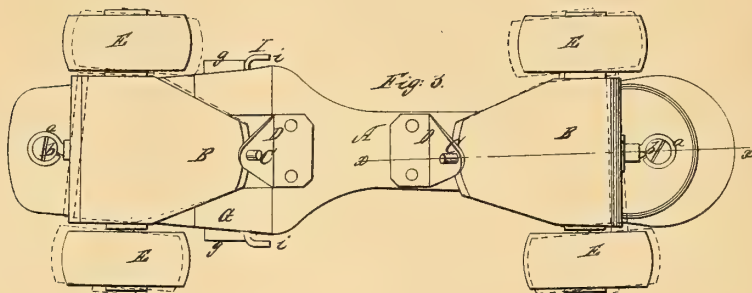
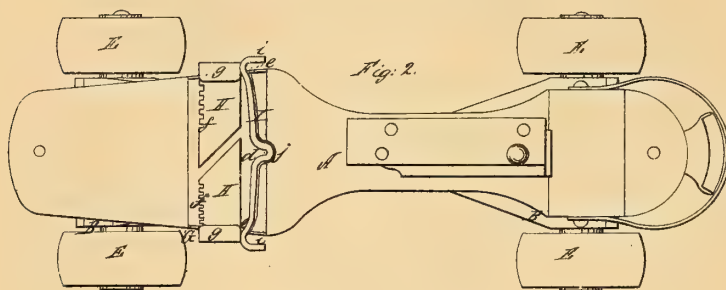
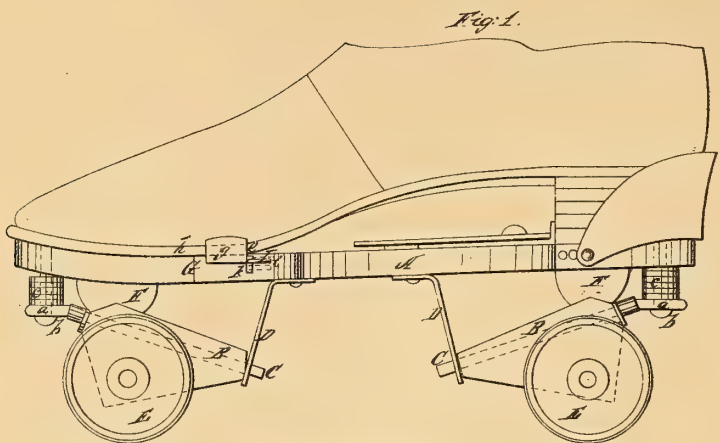
*Inventor:
Albert Anderson
per Munroe &
Attorneys.*

J. L. Plimpton.

Parlor Skate,

N^o 37,305.

Patented Jan. 6, 1863.



Witnesses:

W. S. Partridge
Paul Roberts

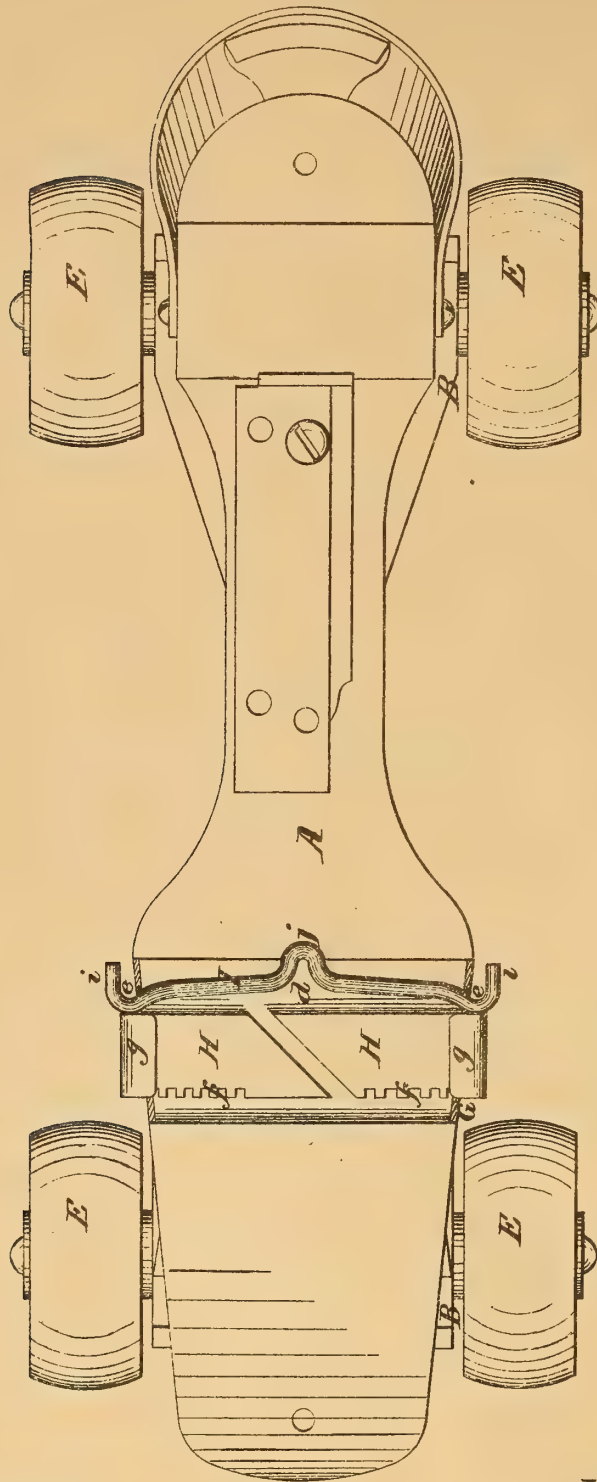
Inventor:

James L. Plimpton

James L. Plimpton's
Imp^t in Skates.

Sheet N^o 2.

Fig. 2.



Witnesses
Andrew B. Van Loan
P. Kymoch

Inventor:
James L. Plimpton

J. L. Plimpton, Parlor Skate,

N^o 3,906.

Reissued Apr. 5, 1870.

Fig. 1.

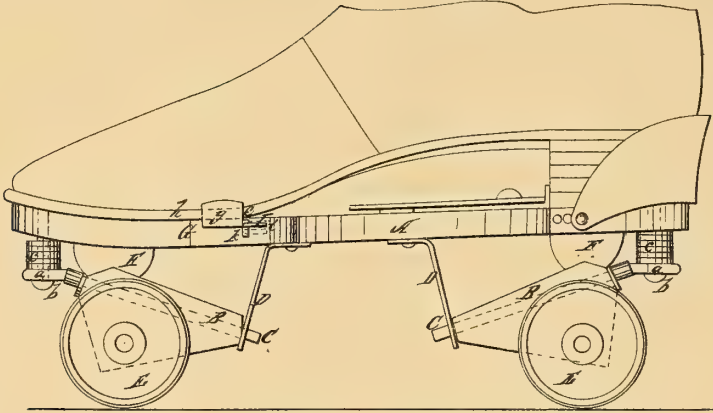


Fig. 2.

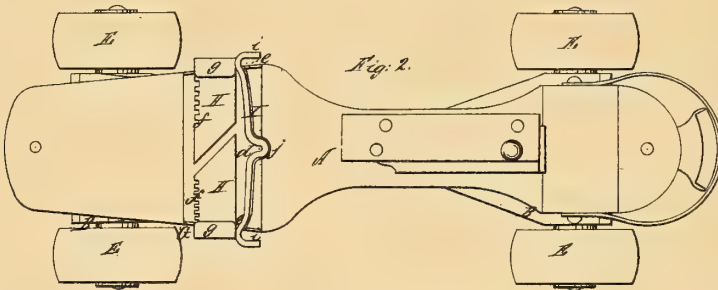


Fig. 3.

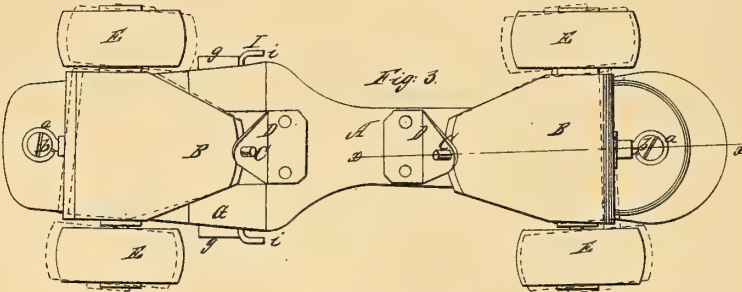


Fig. 4.

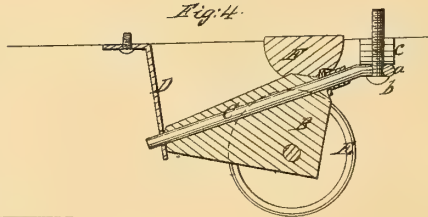
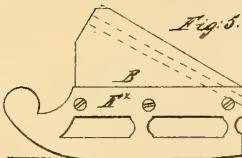


Fig. 5.



Witnesses:

W. J. Partridge
Paul Robertson

Inventor:

James L. Plimpton

UNITED STATES PATENT OFFICE

JAMES L. PLIMPTON, OF NEW YORK, N. Y.

IMPROVEMENT IN SKATES.

Specification forming part of Letters Patent No. 37,305, dated January 6, 1863; reissue No. 3,906, dated April 5, 1870.

To all whom it may concern:

Be it known that I, JAMES L. PLIMPTON, of New York city, in the county and State of New York, have invented a new and useful Improvement in Skates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new construction of skate, and to a new manner of securing the rollers or runners to the sole or foot support of the same with an object of producing, by the transverse rocking motion of the said foot-support, the guiding of the skate in either direction—that is to say, the turning of the rollers or runners to the right or left to cause the skate to move in a circle. Another object of the invention is to retain the same broad base while turning as there is while moving the same in a straight direction; also to provide an adjustment of the hangers on which the rollers or runners are hung, so that a given inclination of the foot will produce a larger or smaller curve during motion.

The invention consists in so hanging or securing the rollers or runners to the foot support or sole that the rocking motion of the latter will cause the said rollers or runners to swing sidewise to run the skate in the line of a circle, and thereby to guide the same to either side. The invention consists also in so securing the hanger that its inclination can be adjusted, thereby regulating the horizontal swing of the rollers or runners to a greater or less curve with a greater inclination of the foot-support. For learners this adjustment will be very convenient, as the same skate answers for different degrees of proficiency of the skater. The invention consists, further, in providing springs or cushions in combination with the hangers, the said springs preventing the rattling of the skate, and tending to throw the foot-support back to a horizontal position, and the rollers or runners into the straight direction, whenever the weight is removed from one side of the foot-support. Finally, the invention consists in a novel arrangement of devices for fastening the foot-

support, if a separate plate, to the boot or shoe of the skater, the said devices being, however, not necessarily connected with the other parts of my invention, nor with any other peculiar construction of skate.

In the accompanying drawing, Figure 1 represents a side view of a skate having my improvements. Fig. 2 is a plan or top view of the same. Fig. 3 is an inverted plan view of the same. Fig. 4 is a detail longitudinal section of a portion of the same, the plane of section being indicated by the line *x x*, Fig. 3. Fig. 5 is a detail side view of one of the runners.

Similar letters of reference indicate corresponding parts.

A in the drawing represents the foot-support or sole of the skate.

To the under side of the foot-support are pivoted, by longitudinal inclined rods C C, two hangers or blocks, B B, of suitable shape. The rods C are fastened to the under side of the foot-support, near the ends of the same, in inclined positions, so that their inner ends are lower than the outer. They are held in place by ears or plates D projecting downward from the foot-support, and by screws or pins *b b* secured into said foot-supports. The pins *b* fit through eyes *a* formed at the upper ends of the rods C. Washers *c c* are interposed between the said eyes *a* and the foot-support. By increasing or decreasing the number or thickness of the said washers, or by changing their position upon the screws, the inclination of the rod C can be regulated. The screws *b* may, if desired, be at the lower and the ears D at the upper ends of the rods C.

E E are rollers hung on the sides of the hangers, one roller on each side of each hanger. F F are springs or cushions, interposed between the hangers and the foot-support or attachments thereof, said springs aiding to support the foot when the weight rests upon the skate, and also when the weight is removed, to bring the parts to place, and prevent the same from rattling or working too freely.

It will be seen that as the hangers are hung on an incline pivot, or its equivalent, which is rigidly connected with the foot-support, the

rocking motion of the latter will carry the higher end of said pivot less far away from the center-line of the skate than the lower end of the same; and that, therefore, by the peculiar oblique position thus imparted to the pivot, the hangers will also be set obliquely to the center-line of the foot-support, without, however, changing its position vertically. The more the foot-support is canted, the more will the hanger be swung aside, and with it the rollers E on it. Thus the rocking motion of the foot-support will cause the rollers to be swung aside, in the manner indicated by red lines in Fig. 3, to run the skate in a curve. The diameter of such curve is made larger or smaller in accordance with the degree of transverse inclination given to the foot-support.

The aforementioned swinging motion imparted to the hanger by the rocking of the foot-support does, however, not affect the bearing of the rollers—that is to say, they remain with their full edges on the floor, to whatever degree they may be swung to the side. The full bearing is thus retained, the process of skating considerably facilitated. The inclination of the pivot C causes, as was shown above, the swinging of the hangers. The more the pivot is inclined the greater will consequently be the swing of the hangers at a certain inclination of the foot-support. The adjustment of the said pivot by means of the washers or their equivalents serves, therefore, to regulate the curve described by the skate at a given inclination of the foot-support.

In place of the rollers E, runners F^x may be attached to the sides of the hangers, their positions being regulated in the same manner as those of the rollers.

In the upper surface of the foot-support is or may be formed a transverse groove or recess, *d*, over which a metal plate, G, is secured. This plate is bent downward and inward at its ends, so as to extend a short distance underneath the foot-support A. In each side of the plate G is made a slot, *e*, and through each such slot is placed a plate, H, into a space between the bottom of the recess *d* and the plate G. The plates H H have each a rack, *f*, formed at their front edges, as shown in Fig. 2. Each plate H is curved upward and inward at its outer end, so as to form a hook, G, to catch over the edge *h* of the sole of the boot or shoe. In the recess *d*, directly behind the plate H, there is placed a spring, I, which is formed of a single piece of wire bent backward at its ends, as shown at *i i*, and also bent at its center to form a horizontal projection, as shown at *j*, in Fig. 2. This wire at its ends bears against the back edges of the plates H H, and keeps the racks *f* at the front edges of said plates engaged with the front

edges of the slots *e*. The plates H H are thereby retained in proper position or prevented from being forced out laterally from the foot-support. In order to release the plates H H that they may be adjusted to the width of the sole, the ends of the spring I are bent down so as to enter the small vertical notches *k* at the back ends of the slots *e*, as in Fig. 1, and thereby be free from the plates H, so that the latter may be pressed backward in the recess *d*, and the racks *f* be free from the front edges of the slots *e*. This adjustment of the wire I is indicated by red lines in Fig. 1.

This fastening for a skate is very effective and simple, and may be applied at a small cost to almost every variety of skate.

The heel-fastening shown in Figs. 1 and 2 is substantially the same as was patented by me March 4, 1862.

A great number of variations and modifications may be employed without departing from the principle of my invention, and I therefore do not confine myself to the precise arrangement of parts as herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The hanger B, attached to a rocking foot-support, and vibrating upon inclined rods attached to said support in the manner shown and described, and for the purpose specified.

2. So attaching the rollers or runners to the foot-support of a skate that they will be swung to run the skate in a curved line to the right or left by the rocking motion of the foot-support, as set forth.

3. The combination, with the shaft on which the rollers are placed, of the rocking foot-support A, springs F, hanger B, and inclined rod C, all arranged substantially as set forth, to enable said rollers to take a curve by a slight twist of the foot.

4. The inclined rod C, held at one end by the rigid piece D, and adjustably attached at the other to the foot-support A for the purpose of determining the degree of curvilinear motion, in the manner described.

5. The plates H H, provided with hooks *g* at their front ends and racks *f* at their front edges, in combination with the spring I and plate G, the latter being applied to the foot-support A, and provided with slots *e* at its ends, all arranged to form a fastening for the skate, as set forth.

JAMES L. PLIMPTON.

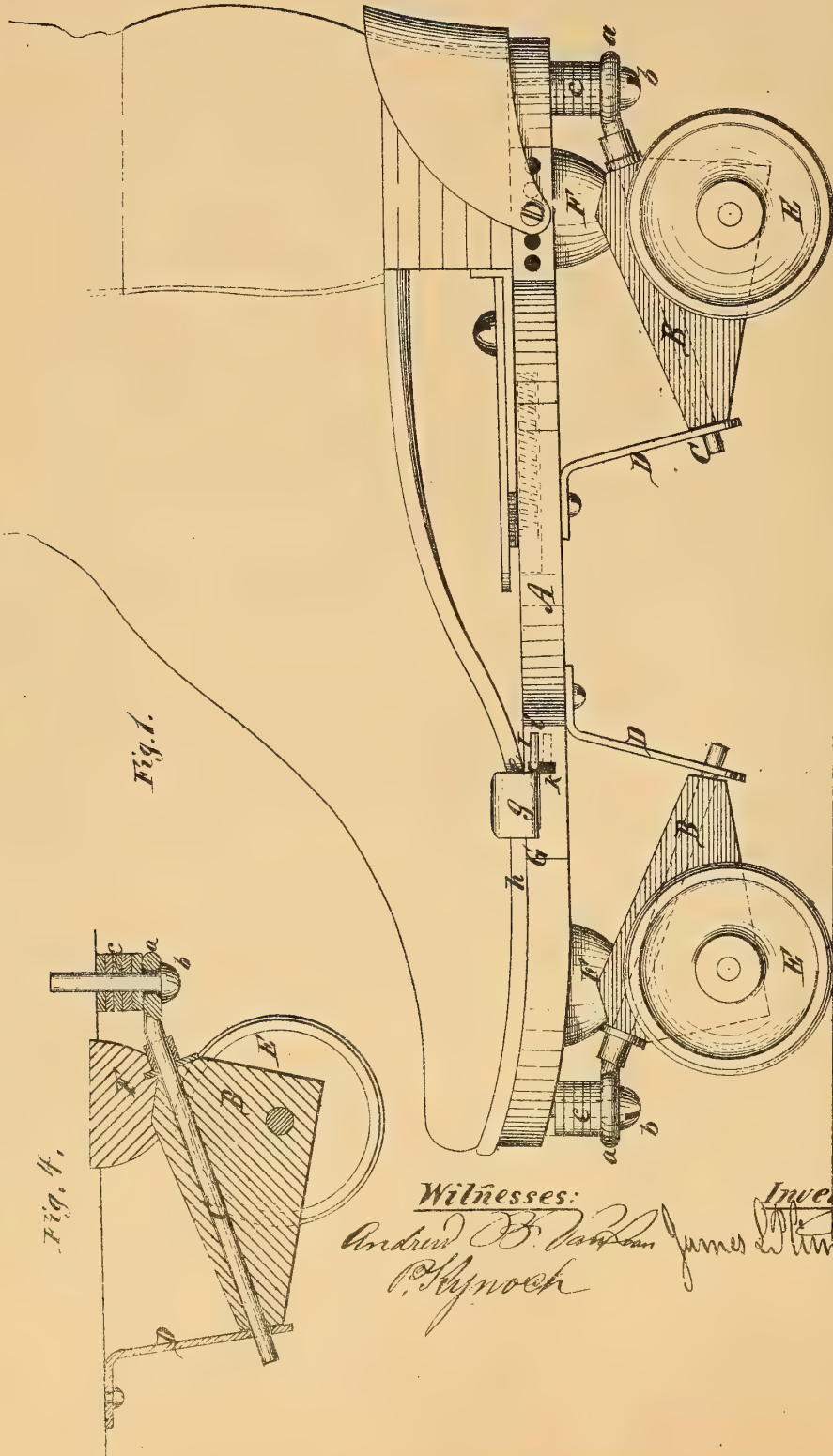
Witnesses:

GEORGE W. MABEE,
A. V. BIESEN.

James L. Plimpton's ^{2. Sheets.} Sheet No. 1.
Impt^d in Skates.

4292

REISSUED MAR 7 1871



Witnesses:

Andrew B. Johnson
 O. Synock

Inventor.

James L. Plimpton

lated in the same manner as when rollers are applied.

By this means of attaching or applying the rollers or runners to the foot-support, or its equivalent, it will be seen that when the foot of the wearer of the skate is inclined, the foot-support A will also be inclined, and the hangers B B, in consequence of being fitted on the inclined rods C C, will "cramp" or turn so as to cause the skate to describe a curve. Hence, in order to turn in either direction, the skater is only required to incline his foot in the direction he desires to move, and the rollers or runners will be moved or cramped in proper position to describe a curve according to the inclination of the foot.

I do not confine myself to the precise ar-

rangement, as herein shown and described, for cramping or attaching the rollers or runners, as many variations and modifications may be made therein without deviating from the main features of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A skate constructed with rollers or runners that cramp, arranged and operated substantially in the manner and for the purposes as herein set forth.

JAMES L. PLIMPTON.

Witnesses:

W. H. McCLURE,
JOHN DUFFY.

UNITED STATES PATENT OFFICE.

JAMES L. PLIMPTON, OF NEW YORK, N. Y.

IMPROVEMENT IN SKATES.

Specification forming part of Letters Patent No. 37,305, dated January 6, 1863; reissue No. 3,906, dated April 5, 1870; reissue No. 4,292, dated March 7, 1871.

DIVISION A.

To all whom it may concern:

Be it known that I, JAMES L. PLIMPTON, of New York city, in the county and State of New York, have invented a new and useful Improvement in Skates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification.

My invention consists in constructing a skate so that the transverse rocking of the skater's foot will cause the rollers or runners to cramp or change their horizontal position, so as to run the skate straight or in curves to the right or left, and at the same time the rollers or runners remain with their full bearings upon the floor or ice, to whatever degree they may be swung oblique while turning curves, thus enabling the skater to steer or guide the skate as desired and to incline his body from the center of gravity while turning curves.

In the accompanying drawings, Figure 1 represents a side view of a skate having my improvements. Fig. 2 is a plan or top view of the same. Fig. 3 is an elevated plan view of the same. Fig. 4 is a detail longitudinal section of a portion of the same, the plane of section being indicated by the line *xx*, Fig. 3. Fig. 5 is a detail side view of one of the runners.

Similar letters of reference indicate corresponding parts.

A in the drawing represents the foot-support or sole of the skate. To the under side of the foot-support are pivoted, by longitudinal inclined rods C C, two hangers or blocks, B B, of suitable shape. The rods C are fastened to the under side of the foot-support, near the ends of the same, in inclined positions, so that their inner ends are lower than the outer. They are held in place by ears or plates D projecting downward from the foot-support, and by screws *b b* secured into said foot-supports. The screws *b* fit through eyes *a* formed at the upper ends of the rods C. Washers *c c* are interposed between the said eyes *a* and the foot-support. By increasing or decreasing the

number or thickness of the said washers, or by changing their position upon the screws, the inclination of the rod C can be regulated. E E are rollers hung on the sides of the hangers, one roller on each side of each hanger. F F are springs or cushions interposed between the hangers and foot-support, or attachment thereof, said springs aiding to support the foot when the weight rests upon the skate and also when the weight is removed, to bring the parts to place and prevent the same from rattling or working too freely.

It will be seen that as the hangers are hung on an inclined pivot, or its equivalent, which is rigidly connected with the foot-support, the rocking motion of the latter will carry the higher end of said pivot less far away from the central line of the skate than the lower end of the same, and hence, by attaching the hangers so as to vibrate in an oblique direction, the rocking of the foot-support will cause the rollers to move horizontally, as shown by red outlines in Fig. 3, where it will be seen that the rollers upon one side of the skate are nearer together than they are upon the other. The aforementioned horizontal motion imparted to the hanger by the rocking of the foot-support does, however, not affect the bearing of the rollers—that is to say, they remain with their full edges on the floor to whatever degree they may be swung to the side, and thus the skate is made to resist the centrifugal force of the skater's body while turning curves.

The inclination of the pivot C causes, as was shown above, the swinging of the hangers. The more the pivot is inclined the greater will, consequently, be the swing of the hangers at a certain inclination of the foot-support. The adjustment of the said pivot, by means of the washers or their equivalents, serves, therefore, to regulate the curve described by the skate at a given inclination of the foot-support.

It will also be seen that when the foot-support is sufficiently rocked or canted to rest upon the hangers B B it prevents the foot of the skater from rocking further.

To adapt my invention to ice-skating, it is only necessary to substitute runners in place of rollers, their relative position being regu-



J. L. Plimpton,

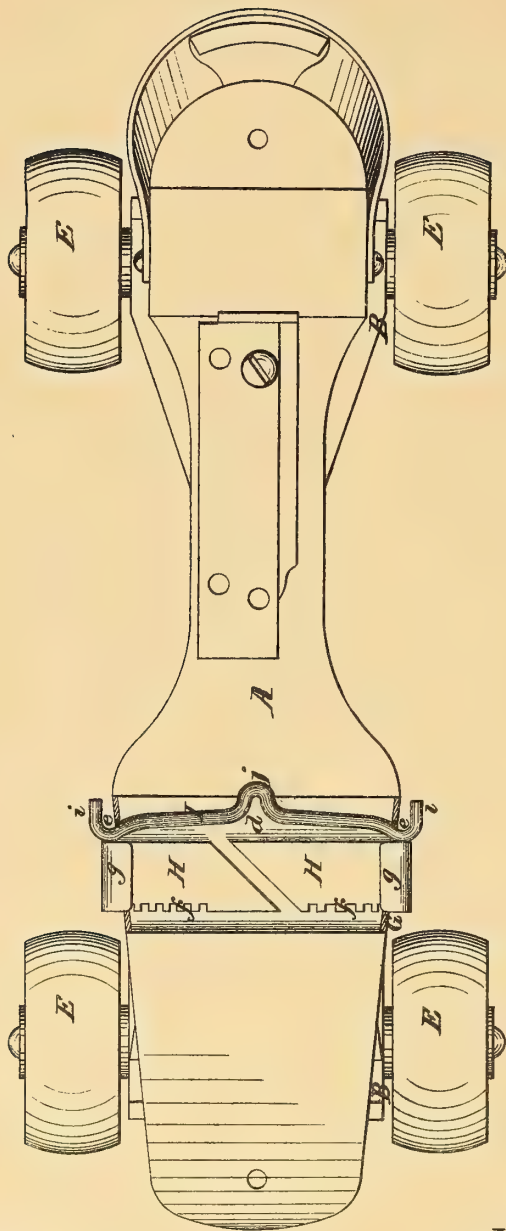
2. Sheets, Sheet 2.

Parlor Skate.

No. 4293.

Reissued Mar. 7. 1871.

Fig. 2.



Witnesses:
Andrew B. Van Loan
P. Symoch

Inventor:
James L. Plimpton

J. L. Plimpton,

Parlor Skate.

No. 4293.

Issued Mar. 7. 1871.

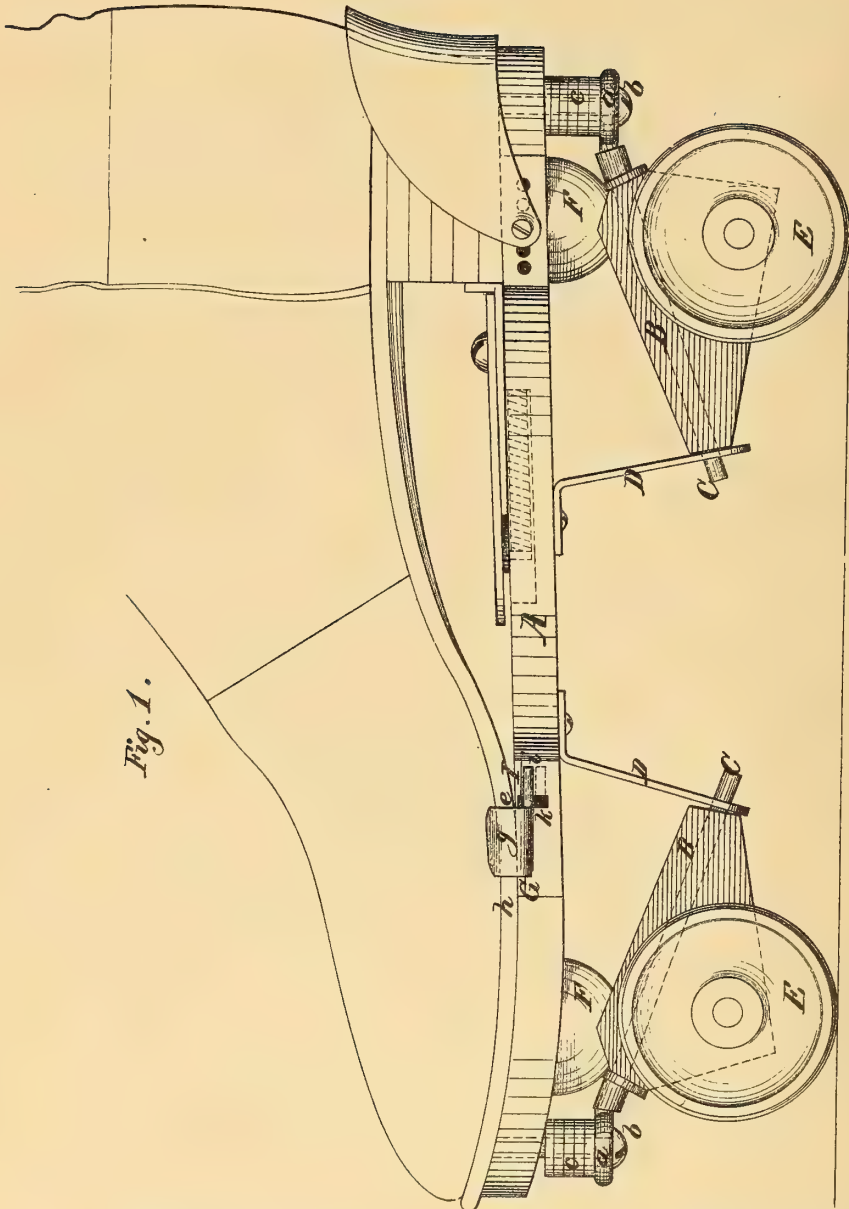


Fig. 1.

Witnesses,
Andrew B. Van Loan
C. Hynoch

Inventor
James L. Plimpton

UNITED STATES PATENT OFFICE.

JAMES L. PLIMPTON, OF NEW YORK, N. Y.

IMPROVEMENT IN SKATES.

Specification forming part of Letters Patent No. 37,305, dated January 6, 1863; reissue No. 3,906, dated April 5, 1870; reissue No. 4,293, dated March 7, 1871.

DIVISION B.

To all whom it may concern :

Be it known that I, JAMES L. PLIMPTON, of the city, county, and State of New York, have invented a new and Improved Skate-Fastening; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of a skate with my improved fastening; and Fig. 2 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved fastening for securing the fore part of the skate to the boot or shoe.

To enable those skilled in the art to fully understand and construet my invention, I will proceed to describe it.

In the upper surface of the stock or foot-stand A of a skate there is made, transversely, a groove or recess, *d*, over which a metal plate, G, is secured.

This plate is bent downward and inward at its ends, so as to extend a short distance underneath the stock or foot-stand A, and the plate G has a slot, *e*, made in each side of it, through each of which a plate, H, passes into a space between the bottom of the recess *d* and the plate G. The plates H H have each a rack, *f*, formed at the front edges, as shown clearly in Fig. 2. Each plate H is curved upward and inward at its outer end, so as to form a hook, *g*, to catch over the edge *h* of the sole of the boot or shoe. In the recess *d*, directly behind the plates H, there is placed a spring, I, which is formed of a single piece of wire bent backward at its ends, as shown, *i i*,

and also bent at its center to form a horizontal projection, as shown at *j* in Fig. 2. This wire at its ends bears against the back edges of the plates H H, and keeps the racks *f*, at the front edge of said plates, engaged with the front edges of the slots *e*. The plates H H are thereby retained in proper position or prevented from being forced out laterally from the stocks or foot-stand A. In order to release the plates H H, that they may be adjusted to the width of the sole, the ends of the spring I are bent down, so as to enter small vertical jogs or notches K at the back ends of the slots *e*, (see Fig. 1,) and thereby be free from the plates H, so that the latter may be pressed backward in the recess *d*, and the rack *f* be free from the front edges of slots *e*. This adjustment of the wire or spring I is shown in Fig. 1.

Any proper heel-fastening may be used. The one represented in drawings, Figs. 1 and 2, is substantially the same as that patented by me March 4, 1862.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The plates H H, provided with hooks *g* at their ends, and racks *f* at their front edges, in combination with the spring I and plates G, the latter being applied to the stock or foot-stand A, and provided with slots *e* at their ends, and all arranged as shown, to form a fastening at the front part of the skate, as herein shown and described.

JAMES L. PLIMPTON.

Witnesses:

W. H. MCCLURE,
JOHN DUFFY.

W. P. Gregg,
Parlor Skate,
N^o 48,929. *Patented July 25, 1865.*

Fig. 4.

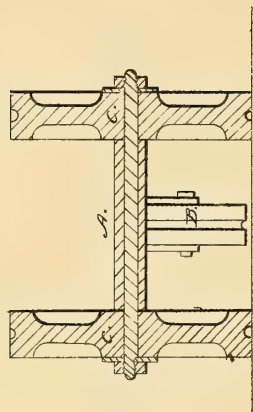


Fig. 3.

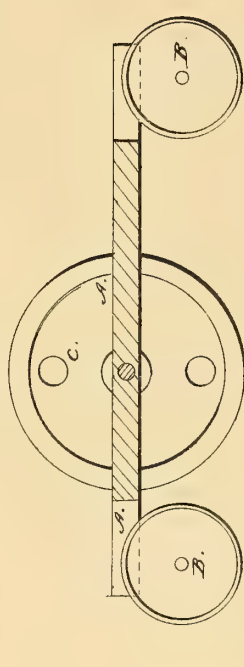


Fig. 7.

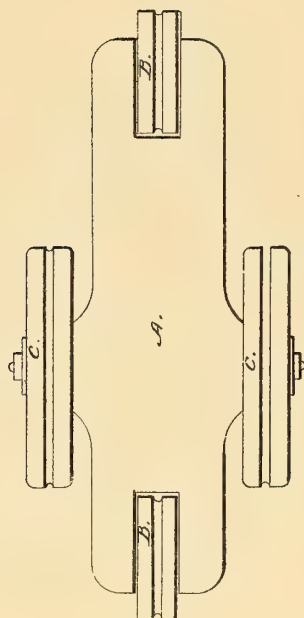
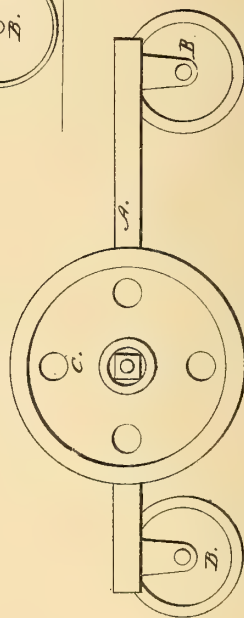


Fig. 2.



Witnesses:

*A. P. Hall &
 G. H. Washburn*

Inventor:

*W. P. Gregg.
 by his attorney
 R. U. Cady.*

UNITED STATES PATENT OFFICE.

W. P. GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVED ROLLER-SKATE.

Specification forming part of Letters Patent No. 48,929, dated July 25, 1865.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Roller-Skates; and I do hereby declare that the following description, with the accompanying drawings, forms a full, clear, and exact specification thereof.

My improvement consists in a novel construction of the roller-skate.

The accompanying drawings exhibit the stock and rollers of a skate embodying my improvements.

Of such drawings, Figure 1 exhibits the skate in top view; Fig. 2, in side elevation; Fig. 3, in longitudinal section, and Fig. 4 in transverse section.

In carrying out my invention I make the stock A of the skate of either metal or wood, of any suitable form, and with any simple attachments for fastening it to the foot of a person, combining lightness, strength, and security.

I arrange two comparatively small rollers, B B, for support, one partly under the heel and the other partly under the toe of the stock, and I also arrange two comparatively large rollers, C C, for driving, one on each side of the stock under the arch of the foot, near the line of gravity of the skater. I make the rollers, their axles and connections or fastenings, of metal or wood, or partly of both, solid or otherwise, securing strength, lightness, and durability. The size of the stock is adapted to the foot, and the size of the rollers may be varied according to the skill of the skater and the quality of the skating surface.

For common purposes the smaller rollers may be three inches in diameter and one inch in width on the periphery, and the larger rollers may be five inches in diameter and one inch in width on the periphery.

The axles or journals of the side rollers project from the stock. These rollers enable the skate to run with greater ease and rapidity than it could by means of the heel and toe rollers alone. They are so arranged that their peripheries or the bearing-surfaces thereof shall be a little lower than those of the heel and toe rollers, in order that the skater while skating may drive himself almost entirely by the large rollers.

Roller-skates thus constructed run with ease and rapidity, and do not injuriously sprain the feet nor weary the limbs, and they will not easily tip backward or forward, and they impart from the first an unusual feeling of security to the skater in all possible movements.

This skate is well adapted to hard sidewalks, large halls, gymnasiums, and skating-schools, and in suitable places for traveling purposes.

I claim—

A roller-skate constructed with a stock having a small supporting-roller under each end and a large driving-roller on each side, substantially as described.

WASHINGTON PARKER GREGG.

Witnesses:

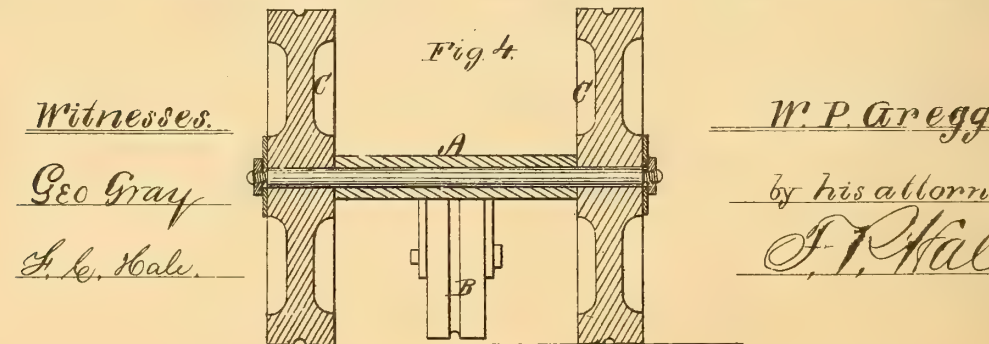
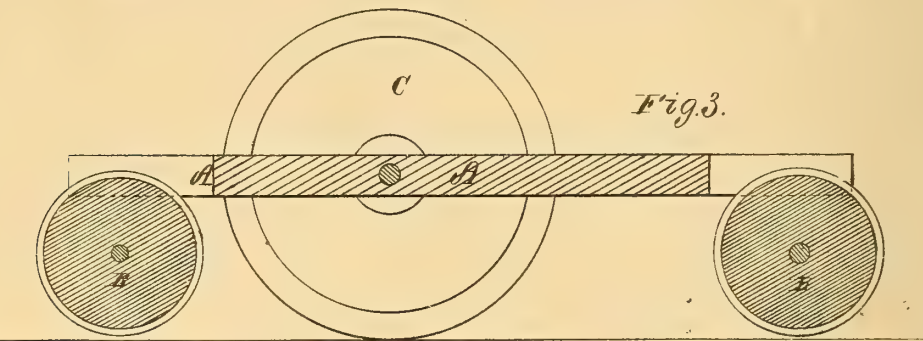
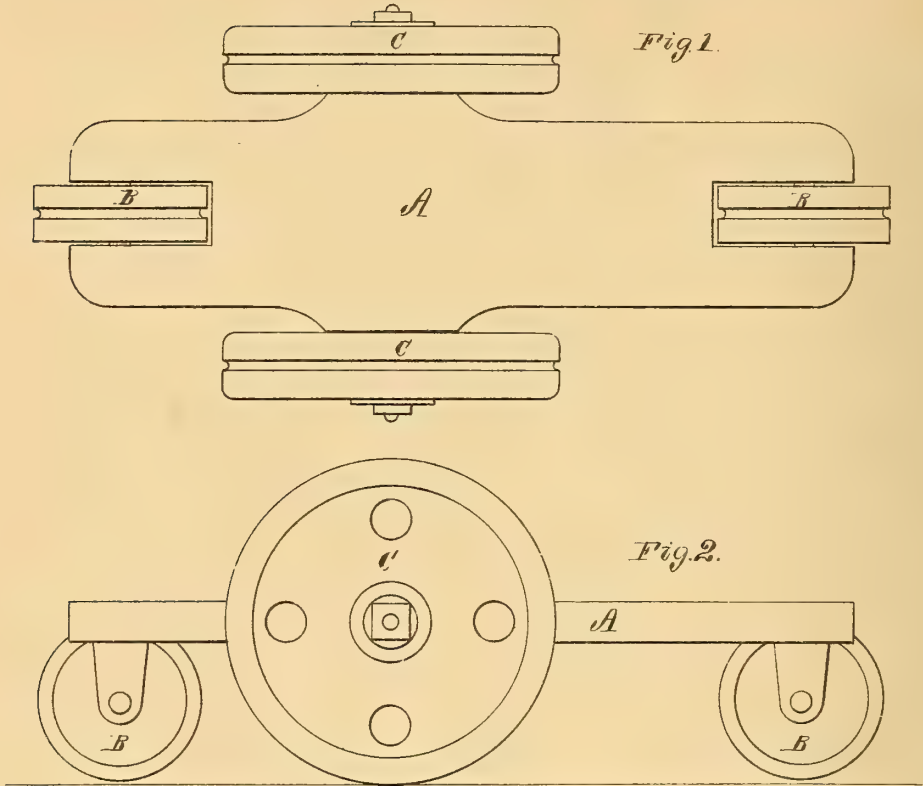
R. H. EDDY,

F. P. HALE, Jr.

W. P. GREGG.
Roller-Skates.

No. 5,707.

Reissued Dec 23, 1873.



Witnesses.

Geo Gray

J. C. Hale.

W. P. Gregg

by his attorney

J. T. Hale

UNITED STATES PATENT OFFICE.

WASHINGTON PARKER GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 48,929, dated July 25, 1865; reissue No. 5,707, dated December 23, 1873; application filed November 12, 1873.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and do hereby declare that the following description with the accompanying drawings forms a full, clear, and exact specification thereof.

My improvements consist in a novel construction of the roller-skate, as hereinafter described and claimed.

The accompanying drawings exhibit the stock or foot-rest and the rollers of a skate embodying my improvements. Of such drawings, Figure 1 exhibits the skate in top view, Fig. 2 in side elevation, Fig. 3 in longitudinal section, and Fig. 4 in transverse section.

In carrying out my invention, I make the stock or foot-rest A of the skate of metal, wood, or other suitable material or materials, and of any desirable form, and with any simple attachment for fastening it to the foot of a person, combining lightness, strength, and security. I arrange two comparatively small rollers, B B, for support, one partly under the heel, and the other partly under the toe of the stock, and I also arrange two comparatively large rollers, C C, for driving one on each side of the stock or foot-rest, under the arch of the foot, near the line of gravity of the skater. I make the rollers, their axles, and connections or fastenings of metal or wood, or partly of both, solid or otherwise, securing strength, lightness, and durability. The size of the stock is adapted to the foot, and the size of the rollers may be varied according to the skill of the skater and the quality or state of the skating-surface. For common purposes the smaller rollers may be three inches in diameter and one inch in width on the periphery, and the larger rollers may be five inches in diameter and one inch in width on the periphery. The axles or journals of the side rollers project from the stock. These rollers enable

the skate to run with greater ease and rapidity than it could by means of the heel and toe rollers alone. They are so arranged that their peripheries or the bearing surfaces thereof shall be a little lower than those of the heel and toe rollers, in order that the skater may drive himself, while skating, by means of the large rollers.

Roller-skates thus constructed run with great ease and rapidity, and do not injuriously sprain the feet, nor weary the limbs, and they will not easily tip backward or forward, and they impart from the first an unusual feeling of security to the skater in all possible movements.

This skate is well adapted to hard sidewalks, large halls, gymnasiums, and skating-schools, and in suitable places for traveling purposes.

Having described my invention, what I claim for roller-skating purposes, is as follows:

1. A skate-stock or foot-rest having a driving-wheel, constructed as described, disposed on an outer axle, at either side of the stock, at or near the middle, the upper parts of the peripheries of said driving-wheels extending above the level of the stock, as described and shown.

2. A roller-skate, constructed with a stock or foot-rest, having a small supporting-roller under each end, and a larger driving-wheel disposed on an outer axle at each side of the stock, the upper portions of the peripheries of the driving-wheels extending above the level of the stock or foot-rest, as described.

3. In a roller-skate provided with a stock, having a supporting-roller under each end and a larger driving-roller on each side thereof, the arrangement of the driving-rollers, so that their peripheries or bearing surfaces shall be in a plane lower than the heel and toe rollers, as specified.

WASHINGTON PARKER GREGG.

Witnesses:

F. P. HALE,

F. H. JENNEY.

W. P. GREGG.
 ROLLER-SKATES.

No. 7,387.

Reissued Nov. 7, 1876.

Fig. 1.

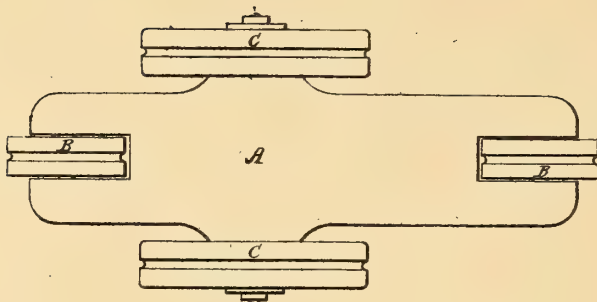


Fig. 2.

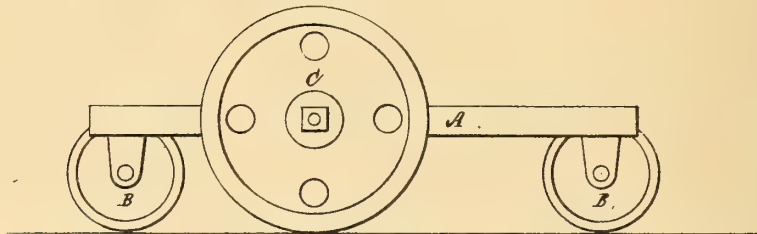


Fig. 3.

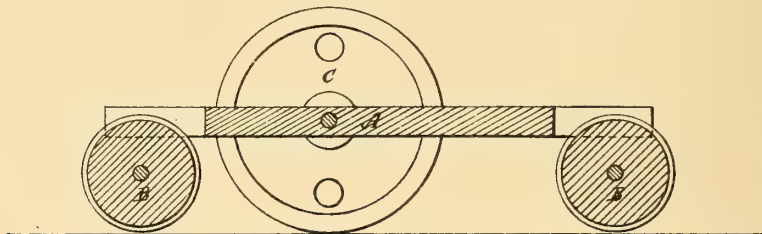
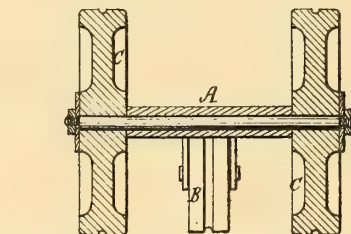


Fig. 4.



Witnesses.

Benj. Hall Currier
 John J. Kline

Washington Parker Gregg

UNITED STATES PATENT OFFICE.

WASHINGTON PARKER GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 48,929, dated July 25, 1865; reissue No. 5,707, dated December 23, 1873; reissue No. **7,387**, dated November 7, 1876; application filed May 18, 1876.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Roller-Skates; and I do hereby declare that the following description, with the accompanying drawings, forms a full, clear, and exact specification thereof.

My improvements consist in the novel construction of the roller-skate hereinafter described and claimed.

The accompanying drawings exhibit the stock or foot-rest and the rollers of a skate embodying my improvements.

Of such drawings, Figure 1 exhibits the skate in top view, Fig. 2 in side elevation, Fig. 3 in longitudinal section, and Fig. 4 in transverse section.

In carrying out my invention, I make the stock or foot-rest A of the skate of metal, wood, or other suitable material or materials, and of any desirable form, and with any simple attachments for fastening it to the foot of a person, combining lightness, strength, and security. I arrange two comparatively small rollers, B B, for support, one partly under the heel, and the other partly under the toe of the stock; and I also arrange two comparatively large rollers, C C, for driving, one on each side of the stock or foot-rest, under the arch of the foot, near the line of gravity of the skater. I make the rollers, their axles, and connections or fastenings of metal or wood, or partly of both, solid or otherwise, securing strength, lightness, and durability. The size of the stock is adapted to the foot, and the size of the rollers may be varied according to the skill

of the skater and the quality or state of the skating-surface. For common purposes the smaller rollers may be three inches in diameter and one inch in width on the periphery, and the larger rollers may be five inches in diameter and one inch in width on the periphery. The axles or journals of the side rollers project from the stock. These rollers enable the skate to run with greater ease and rapidity than it could by means of the heel and toe rollers alone. They are so arranged that their peripheries or the bearing-surfaces thereof shall be a little lower than those of the heel and toe rollers, in order that the skater may drive himself, while skating, almost entirely by the large rollers.

Roller-skates thus constructed run and turn with great ease and rapidity, and do not injuriously sprain the feet, nor weary the limbs, and they will not easily tip backward or forward, and they impart from the first an unusual feeling of security to the skater in all possible movements.

This skate is well adapted to hard sidewalks, large halls, gymnasiums, and skating-schools, and in suitable places for traveling purposes.

Having described my invention, what I claim is as follows:

A roller-skate constructed with a stock or foot rest having a small supporting-roller under each end, and a larger driving-roller on each side, arranged outside of the foot-rest, and having the bearing-surface lower than the end rollers, substantially as described.

WASHINGTON PARKER GREGG.

Witnesses:

RICH. F. MURRAY,
J. H. CHANDLER.

J. L. Plimpton,

Parlor Skate,

N^o 55,901.

Fig. 7.

Patented June 26, 1866.

Fig. 12.

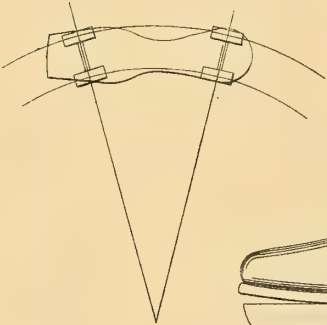


Fig. 3.

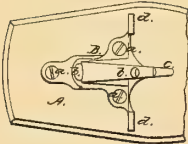


Fig. 2.

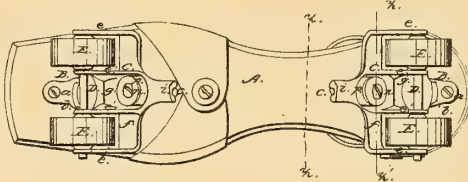


Fig. 4.

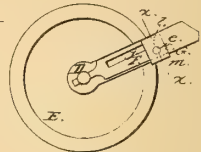


Fig. 5.



Fig. 6.

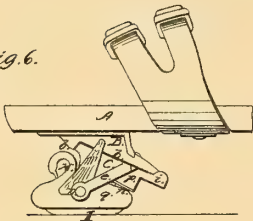


Fig. 8.

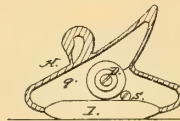


Fig. 10.

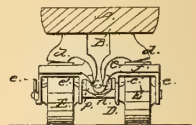


Fig. 7.

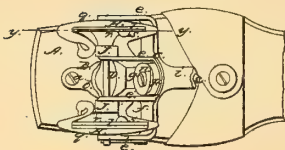


Fig. 9.

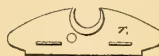
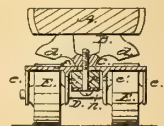


Fig. 11.



Witnesses:

Wm. D. Smith
M. M. Plimpton

[Signature]

Inventor:

James L. Plimpton

UNITED STATES PATENT OFFICE.

JAMES L. PLIMPTON, OF NEW YORK, N. Y.

IMPROVED SKATE.

Specification forming part of Letters Patent No. 55,901, dated June 26, 1866.

To all whom it may concern:

Be it known that I, JAMES LEONARD PLIMPTON, of the city, county, and State of New York, have invented a new and Improved Skate; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a parlor or roller skate applied to the foot; Fig. 2, a bottom or under view of the same; Fig. 3, an under view of a plate pertaining to the same; Fig. 4, a side view of a roller pertaining to the same, with its outside bearing and catch or fastening for holding it on its shaft; Fig. 5, a section of Fig. 4, taken in the line *x x*; Fig. 6, a side view of the front part of the skate with runners attached; Fig. 7, a bottom or under view of Fig. 6; Fig. 8, a section of Fig. 6, taken in the line *y y*; Fig. 9, a detached inner side view of a plate pertaining to the runners of the skate; Fig. 10, a transverse vertical section of Fig. 2, taken in the line *z z*; Fig. 11, a transverse vertical section of Fig. 2, taken in the line *z' z'*; Fig. 12, a diagram showing the position assumed by the rollers or runners in turning a curve.

Similar letters of reference indicate corresponding parts.

This invention relates to certain improvements in roller and other skates patented by me January 6, 1863; and it consists in a novel and improved construction and arrangement of the several parts, whereby several advantages are obtained over the old or original mode of construction, as hereinafter fully set forth.

A represents the stock or foot-stand of the skate, which may be constructed in any proper manner; and B B represent two metal plates, which are firmly secured to the under side of the stock or foot-stand, one near the toe and the other at the heel of the same. These plates B B are of triangular form, (see Fig. 3,) and may be secured to the stock or foot-stand by a screw, *a*, one near each angle or corner.

At the angular end of each plate B there is a socket, *b*, and from the socket of each plate there extends longitudinally and centrally an inclined ledge, *b*, the outer end of which is rounded to form a journal, *c*, (shown clearly in

Fig. 3,) and at the broad ends of the plates B B there are pendent projections *d d*, which are shown clearly in Figs. 10 and 11. These plates, it will be seen by referring to Fig. 1, are secured to the stock or foot-stand in opposite positions, so that the inclined ledges *b b* will extend down from the front and rear ends of the same toward a point in a vertical line passing about through the center of the stock or foot-stand.

C C represent what may be termed the hangers, the same being composed of four inclined pendent bars *c c e' e'*, extending down from a bar, *f*, having a bar, *g*, crossing it at right angles. The bars *g* have at one end a journal to fit into a socket of the plates B B, and the opposite ends of the bars *g* are provided with sockets *i* to receive the journals *c* of said plates B. This arrangement admits of the stock or foot-stand having a lateral tilting movement either to the right or left.

In the lower parts of the inclined pendent bars *c c e' e'* of each hanger C there is inserted a shaft, D, on which rollers E are placed so as to turn loosely. This shaft has a head at one end, and a sliding key, F, passes through the opposite end, said key being flattened at one part sufficiently to admit of an oblong slot, *j*, being made longitudinally through it to allow a pin, *k*, in one of the bars *e* to pass through, said pin *k* serving as a guide for the key. The key is prevented from casually drawing out from the hole in shaft D by having a slot, *l*, (see Fig. 4,) at the outer end of slot *j*, at right angles to it, in which slot *l* the pin *k* may be fitted, and the key F is prevented from being shoved laterally, so as to prevent the pin *k* from casually getting out of *l* by means of a button, G, which is fitted on the pin *k*, and has a flange in it at one end to fit over the side of F. When the key is to be withdrawn from the hole in shaft D, to admit of the removal of the latter, the button G is turned so that its flange *m* will be at the outer end of the key F and admit of the key F being shoved laterally, so that the pin *k* may be adjusted in the slot *j* and admit of a longitudinal movement of the key. By this arrangement the shafts D are firmly secured in the hangers, and at the same time may be readily removed therefrom when necessary or required.

The rollers E are placed on the shafts be-

tween the arms $e' e' e'$, as shown in Fig. 2, and said rollers have their peripheries covered with emery, or have a roughened surface produced in any proper way, in order to prevent them from slipping.

The hangers C C are secured to the plates B B by screws n , which pass through the center of the bars g of the hangers and into the inclined ledges $b b$ of the plates B, said screws having a plate, o , on them, between which and the bars g a spring, p , of india-rubber or other suitable material, is placed. These springs p keep the hangers in contact with the plates B, and prevent all unnecessary play or vibration of the same in an upward direction, and control the turning, tilting, or canting of the stock or foot-stand.

In consequence of the ledges $b b$ of the plates B B being inclined, it will be seen that if the stock or foot-stand A be tilted or inclined either to the right or left the shaft-hangers C C, and consequently the shafts D, will be cramped, so as to form radii of a circle, (see Fig. 12,) and the skate will consequently move in or describe a curve. The skater, therefore, has perfect command over the skates, and is enabled to perform curves, gyrations, and evolutions with the greatest facility.

When the invention is to be used on ice runners are employed, constructed and applied as follows: Upon the shafts D there are placed loosely what may be termed "clamps," H, composed of two parts, $g r$. The parts g may be of any ornamental design, (that of a swan is here represented,) and the other part, r , is simply a plate secured to g by a screw, s , the runner I being between $g r$. The runners I have smooth running surfaces, with angular edges, so that they may be reversed when the inner edges lose their angularity by wear, and a fresh, sharp edge obtained; and when both edges of one surface become worn the runner may be inverted and two more angular or sharp edges obtained. Thus, each runner has four angular edges, which may be successively used before the runner will require to be sharpened.

The clamps H are retained in proper position on the shafts D by india-rubber or other washers, J, (shown clearly in Fig. 7.) The stock or foot-stand is prevented from tilting beyond a proper distance in consequence of the bars f of the hangers coming in contact with the pendent projections $d d$ of the plates B B, while the clamps H on the shafts D have their movement thereon limited by the ends of the wings of the swan and the tail coming in contact with the bars f .

By this mode of construction I obtain a far stronger and more durable skate than the one originally devised. The stock or foot-stand is more firmly supported, and the ankle of the skater is relieved from that constant and tedious effort to keep the stock or foot-stand in a horizontal position, or to prevent it from casually tilting or canting laterally. All unnecessary play of the parts, and consequently much wear and tear, is avoided.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The construction of the plates B and hangers C, arranged and applied to the stock or foot-stand, to operate in the manner substantially as and for the purpose set forth.

2. The key E, provided with the slot $j l$ and the button G, and arranged in connection with the pin k , substantially as and for the purpose set forth.

3. The springs p , applied to the screws n , which secure the hangers C to the plates B, for the purpose of preventing vertical or upward-and-downward play of the hangers, and controlling the turning, tilting, or canting of the stock or foot-stand, as set forth.

4. The clamps H, composed of two parts, $g r$, for holding the reversible runners I.

5. The reversible runners, arranged substantially as shown, for the purpose specified.

JAMES L. PLIMPTON.

Witnesses:

WM. DEAN OVERELL,
M. M. LIVINGSTON.

G. Flint,
Parlor Skate,
No 64,301, *Patented Apr. 30, 1867.*

Fig. 1.

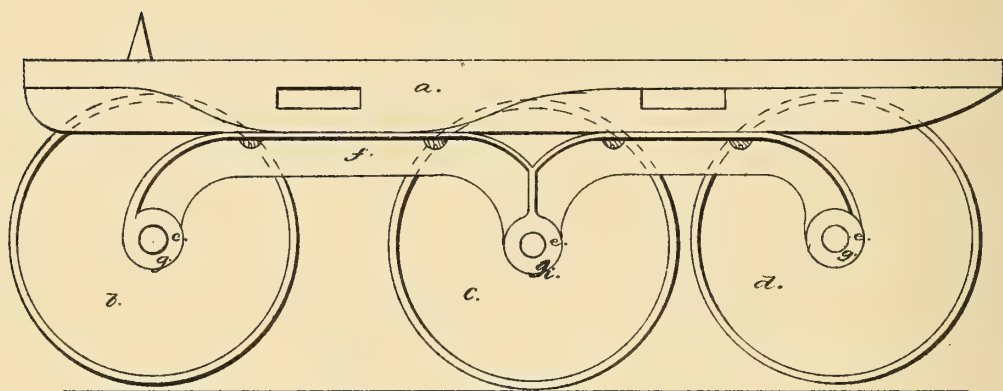
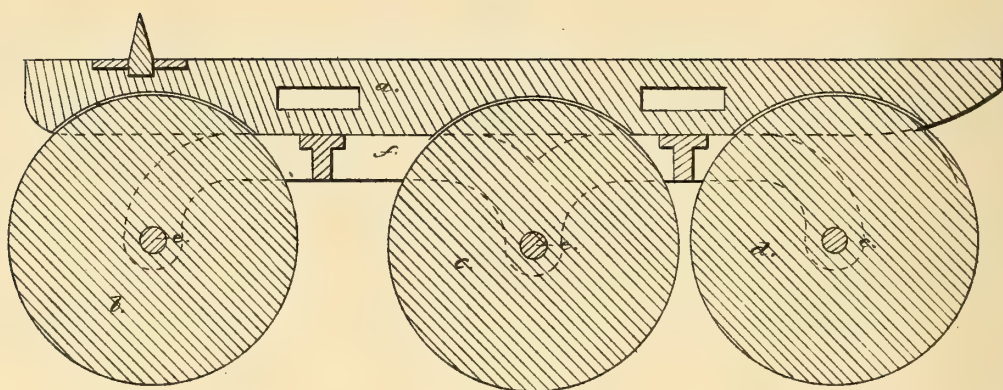


Fig. 2.



Witnesses:

Geo. C. Perry,

Abner Perry.

Inventor:

George T. Flint.

United States Patent Office.

GEORGE FLINT, OF LOWELL, MASSACHUSETTS.

Letters Patent No. 64,301, dated April 30, 1867.

IMPROVEMENT IN PARLOR SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE FLINT, of Lowell, in the county of Middlesex, and State of Massachusetts, have invented new and useful Improvements in Parlor Skates; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in providing a skate with three wheels or runners, the middle one being so placed that it will enable the skater to turn from a straight line in any direction with ease, without any inconvenience.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 represents a side elevation of my improved skate.

Figure 2 represents a longitudinal section of the same.

a represents the stock; *b c* and *d* the wheels or runners; *e e e* the bearings or gudgeons; *f* the wheel or runner stand, and *g h* and *g* the journals. The stock *a* is prepared in the usual way, with suitable slots or mortises for passing through the fastening-straps. The stand *f*, which receives the wheels, is then cast in one piece, with finished journals *g h* and *g*, the journal *h* being a little below a line drawn through the centres of the journals *g g* or the journals *g h* and *g* may be on a line, and the centre wheel *c* a little larger. The wheels *b c* and *d* being finished to the same size, are placed in the stand *f*. The finished bearing or gudgeons *e e e* are passed through the journals *g h* and *g* on one side of the stand *f*, through the wheels *b c* and *d* into the opposite journals, and can be made fast in either the journals or wheels. The stand *f* is then fastened to the under side of the stock *a* by screws or any other means. Much difficulty has been experienced heretofore in parlor skates, arising from the great difficulty in the skater being unable to control his course or direction out of a straight line. The turning apparatus in the skates being complicated and unsuited to the object required, often and many times brings the skater to a stand-still for the purpose of changing his course, thus arresting and losing the momentum of the body acquired when running on a straight line. In my improved skate, the middle wheel *c* is lower, and so placed in the stand *f* of the skate that the skater is enabled completely to balance himself on the same. By so doing, the bearing surface of this one wheel being so small, gives the skater full and entire control to change his course in any direction, whether on a curve or angle, and at the same time fully retaining the momentum of his body previously acquired.

What I claim as my invention, and desire to secure by Letters Patent, is—

I claim the middle wheel or runner *c*, in combination with the wheels *b* and *d*, arranged substantially as herein described and for the purpose fully set forth.

GEORGE FLINT.

Witnesses:

GEO. E. PEVEY,
ABIEL PEVEY.

R. Hewson,
Parlor Skate,
No 78,207, Patented May 26, 1868.

Fig. 1.

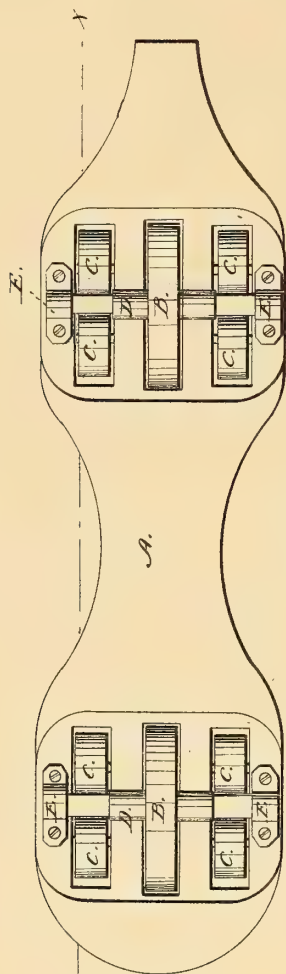


Fig. 2.



Witnesses:
Geo H Strong
J L Brown

Inventor:
Robert Hewson.
By his Att'y D. E. & Co.

United States Patent Office.

ROBERT HEWSON, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 78,207, dated May 26, 1868.

IMPROVEMENT IN PARLOR-SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ROBERT HEWSON, of the city and county of San Francisco, State of California, have invented an Improved Parlor-Skate; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

The object of my invention is to provide an improvement in parlor-skates of that class in which small wheels or rollers are used for moving about on a floor or level surface, and it consists in the use of friction-rollers for supporting the axles of the main wheels upon which the skate moves.

Reference being had to the accompanying drawings, forming a part of this specification,

Figure 1 is a plan.

Figure 2 is a side sectional elevation taken through X X.

Similar letters of reference in each of the figures indicate like parts.

A is the block or supporting-base for the foot, which may be constructed of wood or iron, as desired, for the requisite lightness and strength.

Two rollers or wheels, B B, are placed, one near each end of the block, in such positions as to support the ball of the foot and the heel. The friction-rollers C C C are so placed that when a weight is brought to bear on the skate, each end of the axles D will be supported by a pair of the rollers, thus causing the wheels B to move easily and turn freely in any direction.

The axles D are kept in place, and in contact with the rollers, by the straps or boxes E E in which they turn.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In a parlor-skate, the use of the wheels B, having their axles D turning upon the friction-rollers C C C, the whole constructed and arranged substantially as herein described.

In witness whereof, I have hereunto set my hand and seal.

ROBERT HEWSON. [L. s.]

Witnesses:

C. W. M. SMITH,

JNO. L. BOONE.

I. Hodgson,

Parlor Skate.

No. 38711.

Patented Apr. 6. 1869.

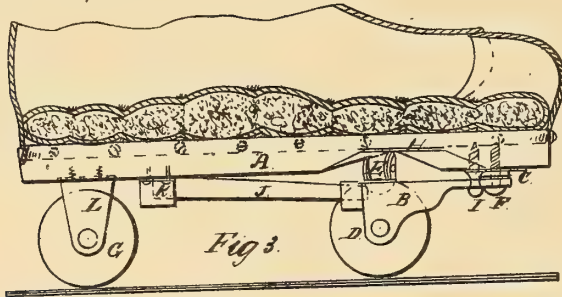


Fig. 3.

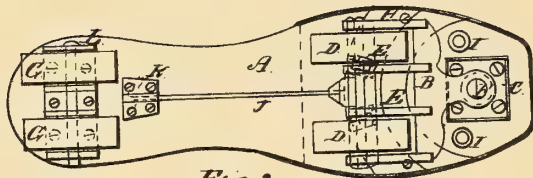


Fig. 2.

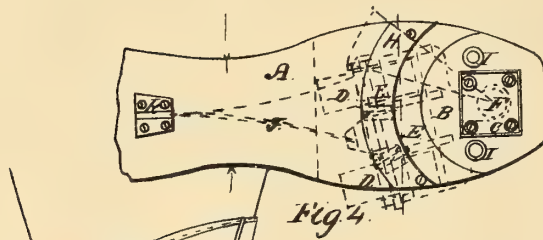


Fig. 4.

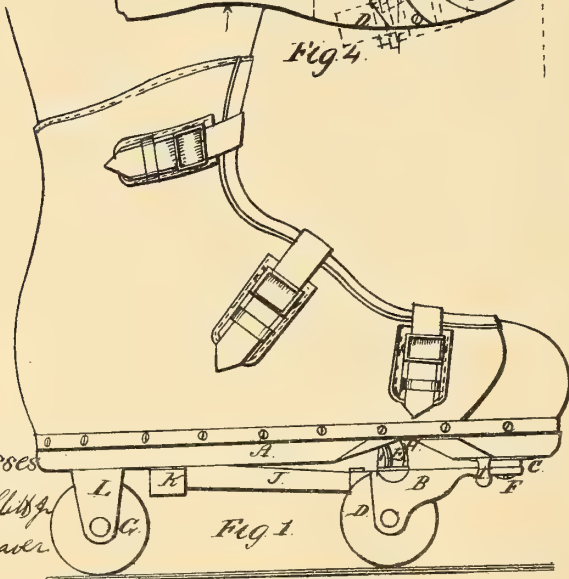


Fig. 1.

Witnesses
John Pollock
Leon Reader

Inventor
I. Hodgson

UNITED STATES PATENT OFFICE.

ISAAC HODGSON, OF INDIANAPOLIS, INDIANA.

ROLLER-SKATE.

Specification forming part of Letters Patent No. 88,711, dated April 6, 1869.

To all whom it may concern:

Be it known that I, ISAAC HODGSON, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Parlor-Velocipede; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable skilled artisans to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates principally to mode of operation of the forward wheel-frame; and it consists in the peculiar construction and manner of attaching the wheel-frame to the sole of the shoe, by which the operator is enabled at pleasure to run in a direct course, or, by the natural horizontal motion of the foot to the right or left, to change the course to a curved track without canting, rocking, or tipping the foot or sole to which the wheel-frame is attached, combined with the arrangement of a spring, which returns the wheel-frame to a direct line when the pressure upon the wheels is removed by raising the foot.

This invention further relates to construction and manner of attaching a padded shoe to the sole, by which the ordinary walking-shoe may be dispensed with, and the comfort of the wearer greatly enhanced.

Figure 1 is a profile of my invention. Fig. 2 is an inverted view, showing the mode of attaching the wheel-frame, spring, &c., to the sole. Fig. 3 is a longitudinal vertical section, showing the pad, &c. Fig. 4 is an inverted view of the front wheels, spring, &c., showing their alternating direction.

Similar letters of reference indicate like parts in the several figures.

A represents the sole of the shoe; and B the front wheel-frame, with arm extending forward and pivoted to the plate C, which is securely attached to the sole. Directly over the axis of the wheels D the friction-rollers E, which are connected with the wheel-frame B,

are set in lines radiating from the pivot F, over the friction-rollers E.

A segmental way, H, is secured to the sole A, so that when the weight of the body is thrown on the rear wheels, G, and the toes turned horizontally to the right or left, the wheel-frame B will turn on the pivot F, as indicated by red lines in Fig. 4, and enable the operator to freely move the foot on the friction-rollers E, and describe any desired curve with the foot in a horizontal position.

Stops I are secured to the sole A, to limit the sweep of the wheel-frame B. The spring J, which is attached to the sole at K and extends to the wheel-frame B, where it freely enters a slit in the frame between the wheels D, is of sufficient strength and elasticity to force the wheel-frame B from the position shown by red lines in Fig. 4 to a direct line, as shown in Fig. 2.

The rear wheel-frame, L, is secured to the sole A, so that the wheels G will always be in a direct line; the pad M of the shoe to be of elastic material, of any desired thickness and elasticity to accommodate the foot.

The shoe may be of leather or canvas, lined with flannel, and securely attached to the edges of the sole, and provided with straps and buckles, for convenient and secure fastening.

I claim—

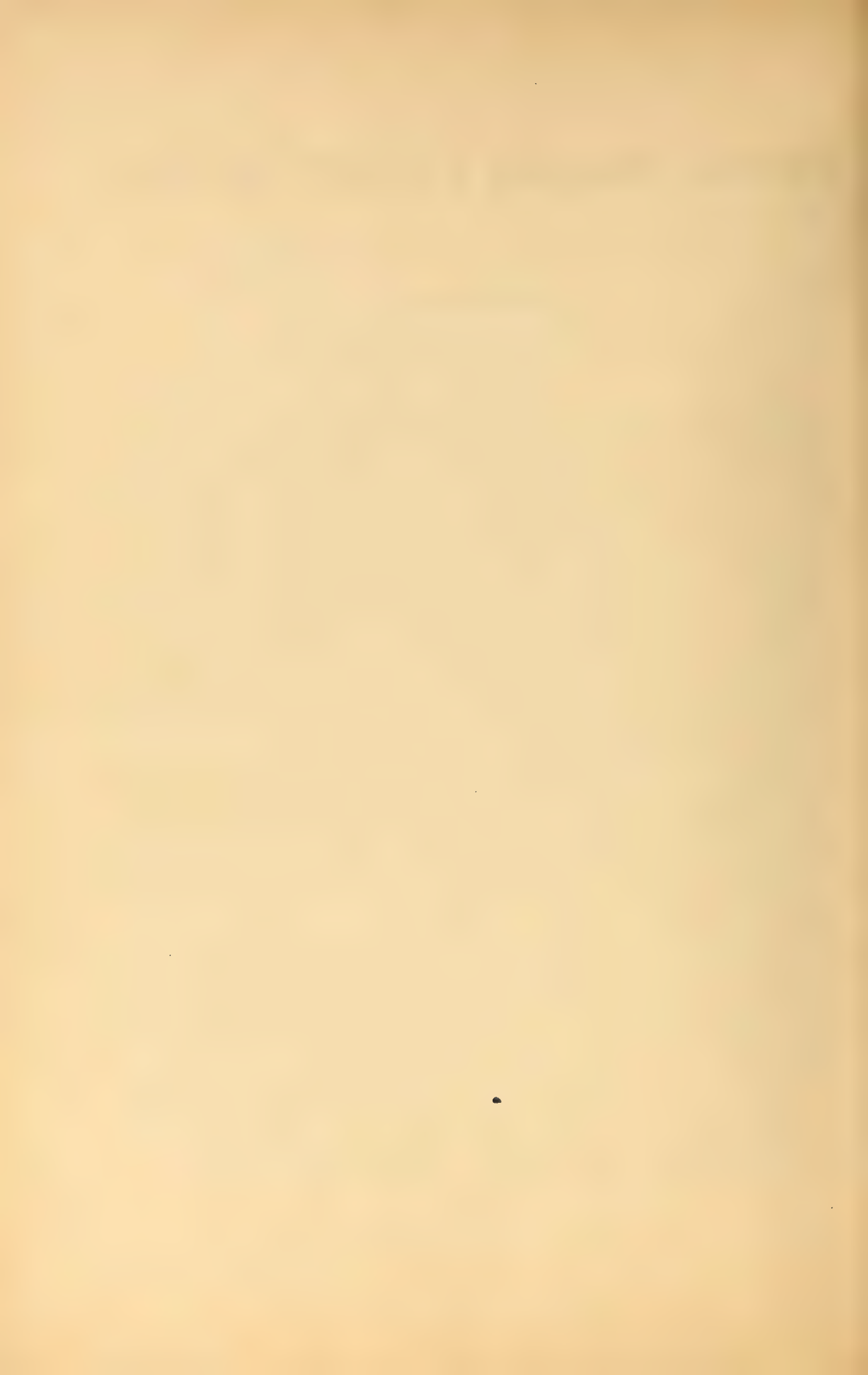
1. The wheel-frame B, provided with the forward-projecting arm, and furnished with the friction-rollers E, interposed between the frame and the sole, and attached by the arm to the forward part or toe of the sole, in the manner and for the purpose substantially as set forth.

2. The spring J, in combination with the wheel-frame B, constructed and arranged substantially as and for the purpose set forth.

ISAAC HODGSON.

Witnesses:

JOHN POLLITT, Jr.,
LEON BEAVER.



T.L. Luders.

Skaters' Appliances.

N^o 89,833 Patented May 4, 1869.

Fig. 2.

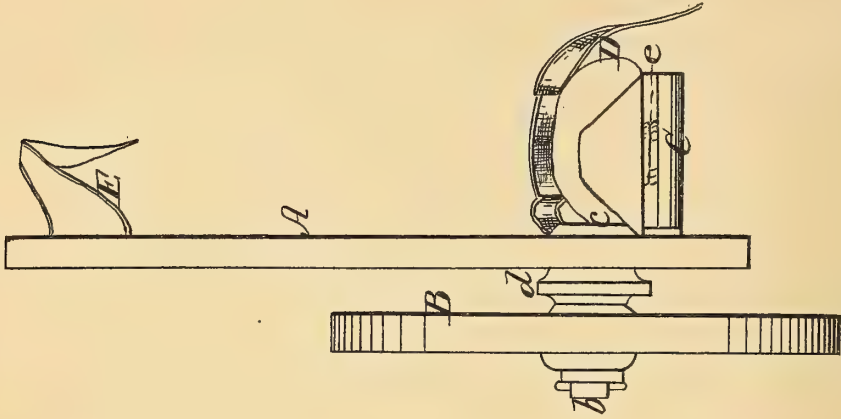
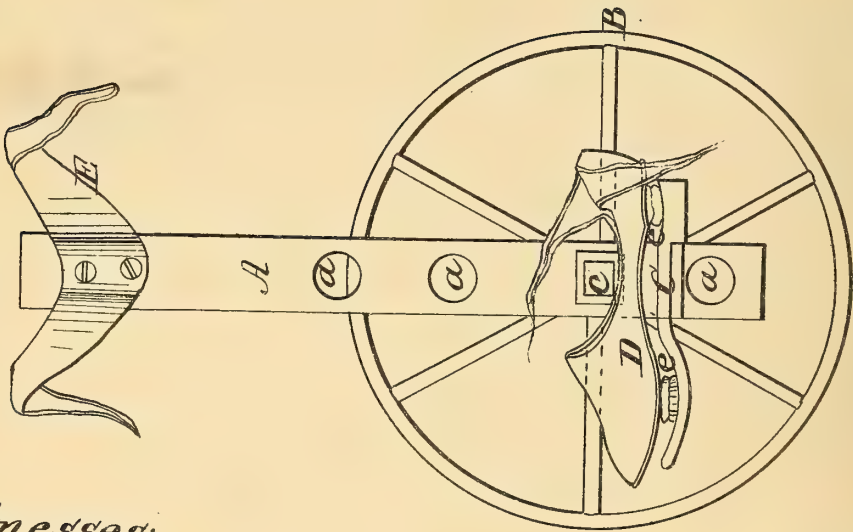


Fig. 1.



Witnesses;
Geo. W. Roswell,
Phil. G. Lamer,

Inventor;
Thos. L. Luders
by A. L. Luders
Attys

United States Patent Office.

THOMAS L. LUDERS, OF OLNEY, ILLINOIS.

Letters Patent No. 89,833, dated May 4, 1869.

FIELD-SKATE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS L. LUDERS, of Olney, in the county of Richland, and State of Illinois, have invented a new and useful Field-Skate; and I do hereby declare that the following is a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains, to make and use the same, reference being had to the accompanying drawings, making a part of this specification, and in which—

Figure 1 is a side view, and

Figure 2, a front view of my device.

The object of this invention is to provide a device by means of which the surface of the ground may be traversed, with the same graceful, easy, and delightful motion as when skating on ice.

The invention consists in the use of a wheel, mounted on a stud, adjustable on a short standard, provided with a foot-piece, on which the foot rests, said standard being adapted to be strapped, or otherwise secured to the ankle or leg of the wearer, so that the periphery of the wheel is in contact with the ground.

My invention will be fully understood by reference to the accompanying drawings, considered in connection with the following description.

In the drawings—

A represents a side piece, provided with holes, *a a*, in either of which may be fixed a stud, *b*.

This stud has a head, *c*, and *d* is a nut, screwed on to the stud on the opposite side of the side piece A from the head *c*.

On the stud *b* a wheel, B, is fitted to turn.

This wheel may be either on the inside or outside of the ankle-piece A, and it projects below the same, so as to rest on the ground.

C represents a foot-rest, secured in any suitable manner to the side piece A, opposite the wheel B.

D is an over-shoe, on the foot-rest C.

e e are springs, interposed between the over-shoe and the foot-rest, to prevent jarring and shocks, which would otherwise be occasioned by passage over a rough road.

E is a cushion, fixed to the upper part of the side-piece A, and provided with any suitable means for at-

tachment to the ankle or leg. The over-shoe D also has some fastening.

My field-skates can be applied to either side of one or both ankles, and the wheels are adjustable, so as to elevate the rider more or less, as desired.

The skate, or skates having been secured, the rider may traverse the ground, gravel-walks, pavements, and any tolerably even surfaces, with the same motion, and with nearly the same facility, as when skating on ice. The motion is rendered easy and pleasant by the springs, or their equivalents, interposed between the over-shoe and foot-rest.

I would here state that the foot-rest may be made movable, but I prefer it stationary.

It may also be found unnecessary to have the wheel or its stud adjustable. Therefore, I do not limit myself to an adjustable wheel.

The use of this device will be a source of amusement and pleasure, as well as beneficial to health; and, as it can be made of any size, at little expense, and used during all seasons of the year, without the practice required, and danger incurred in skating, it will be at once appreciated by the public.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. For the purposes of a field-skate, the standard A, made adjustable, as set forth.

2. The arrangement of the wheel B at the side of the adjustable standard A, substantially as and for the purpose described.

3. The side-wheel B, in combination with the standard A, and a foot-rest, C, secured thereto, below the axis of the wheel, substantially as and for the purpose described.

4. The springs interposed between the over-shoe and foot-rest, substantially as and for the purpose described.

To the above I have signed my name, this 3d day of March, 1869.

THOS. L. LUDERS.

Witnesses:

W. A. WIEDERSHEIM,

H. M. WIEDERSHEIM.

G. K. Stillman.

Parlor Skate.

N^o 90,603.

Patented May 25, 1869.

Fig: 1.

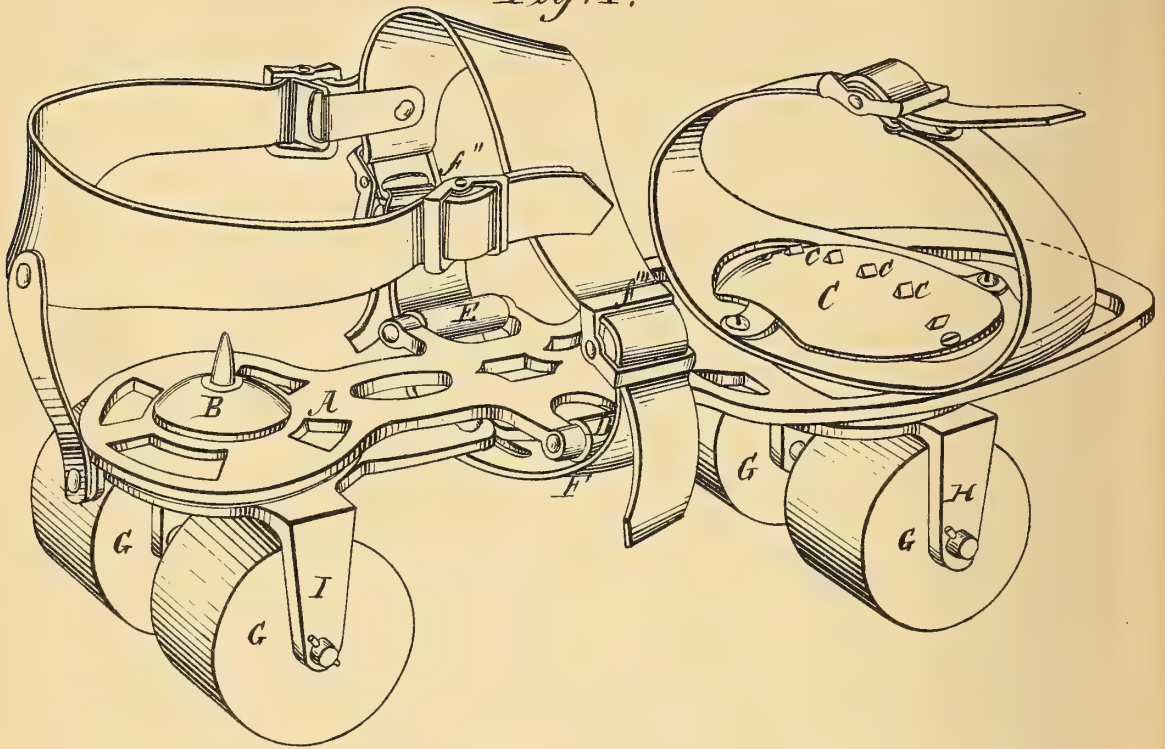
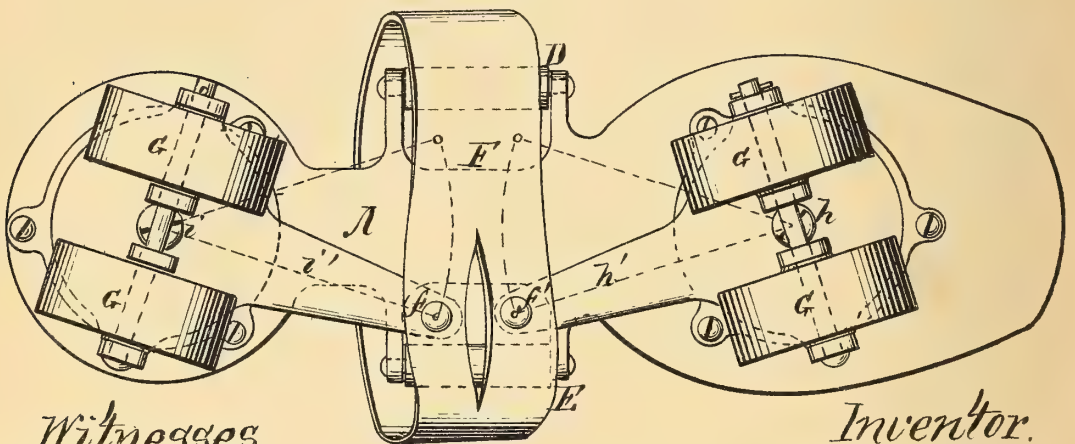


Fig: 2.



Witnesses.
Charles Bauer

Charles Pickles

Inventor.

Geo. K. Stillman

Per Frank Mullen & Atty

UNITED STATES PATENT OFFICE.

GEORGE K. STILLMAN, OF CINCINNATI, OHIO.

ROLLER-SKATE.

Specification forming part of Letters Patent No. **90,603**, dated May 25, 1869.

To all whom it may concern:

Be it known that I, GEORGE K. STILLMAN, of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Improvement in Roller-Skates; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable one skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in connecting the rollers of the skate to the foot-board of the same in such manner that the said rollers will be turned, cramped, or adjusted (in order to follow a curved track, right or left, agreeing with the bodily motion) by means of the strap or fastening device which encircles the foot of the skater, the said strap being connected to the frames which contain the rollers.

In the accompanying drawings, Figure 1 is a perspective view of a skate embodying my invention. Fig. 2 is a plan of the bottom of the same.

A is the foot-board or stock of the skate, which may be of wood or iron. To the top side of the foot-board A crowning-plates B C are attached, on which the foot of the skater is permitted to roll, as the body is inclined right or left, to turn a curve, the forward plate, C, being provided with a series of spikes, *e*, and the plate B with a center spike for the heel. The stock A is also provided, about midway between heel and toe, with rollers D E, over which the strap F rolls.

The rollers G of the skate, which are four in number, and constructed preferably of hard wood, are journaled in the frames H I, as shown, the frames being pivoted to the stock A at *h* and *i*, and having arms or lever *h'* *i'*, which connect at *f f'* with the strap F.

The strap F is split, as shown, between the points *f f'*, to permit of the vibration of the arms *h' i'*, and is fitted with two buckles, *f''*

f''', one on each side of the foot, for the purpose of permitting adjustability to suit the skater.

Operation.

It will be seen that when the body of the skater is inclined to describe a curve, right or left, that the foot will roll over the foot-board A, and will forcibly revolve the strap F, which in its turn will carry the levers *h i* to the opposite side to that on which the body is inclined. The rollers G are in this way so adjusted (see Fig. 2 that the skate will follow a curved track agreeing with the inclination of the body.

I am aware that skates have been in use in which the rollers are adjusted to describe curves; but in these the operation is performed by turning or canting the foot stand or stock, and springs are necessary to keep or return the rollers to the middle position. In these, also, there can be no provision for adjustability to suit the fancy or requirements of the wearer.

I do not desire to confine myself to the use of rollers only, as it is obvious that ice-runners can be attached in place of the rollers, and be operated upon in the same way and for the same purpose.

I claim herein as new and of my invention—

The strap or fastening device F, which encircles the foot of the skater and attaches it to the foot-board A of a skate in such a manner that the rollers or runners will be turned or adjusted thereby, so as to run the skate in a curved line, right or left, substantially as described.

In testimony of which invention I hereunto set my hand.

GEO. K. STILLMAN.

Witnesses:

CHAS. E. CALLAHAN,
JOHN D. DAVENPORT.

G. Brownlee.

Parlor Skate.

Nº 92,930.

Patented July 27, 1869.

Fig: 3

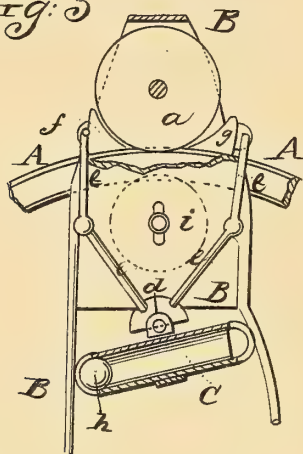


Fig: 2

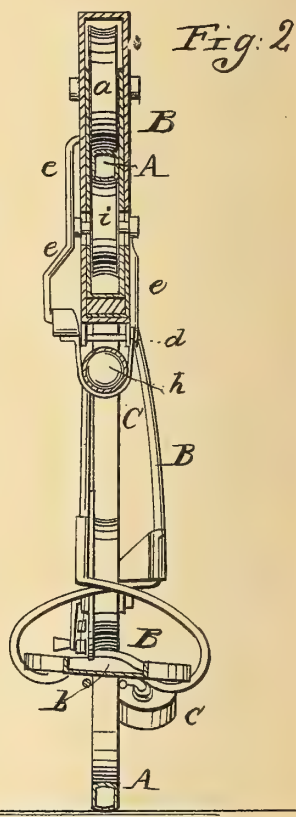
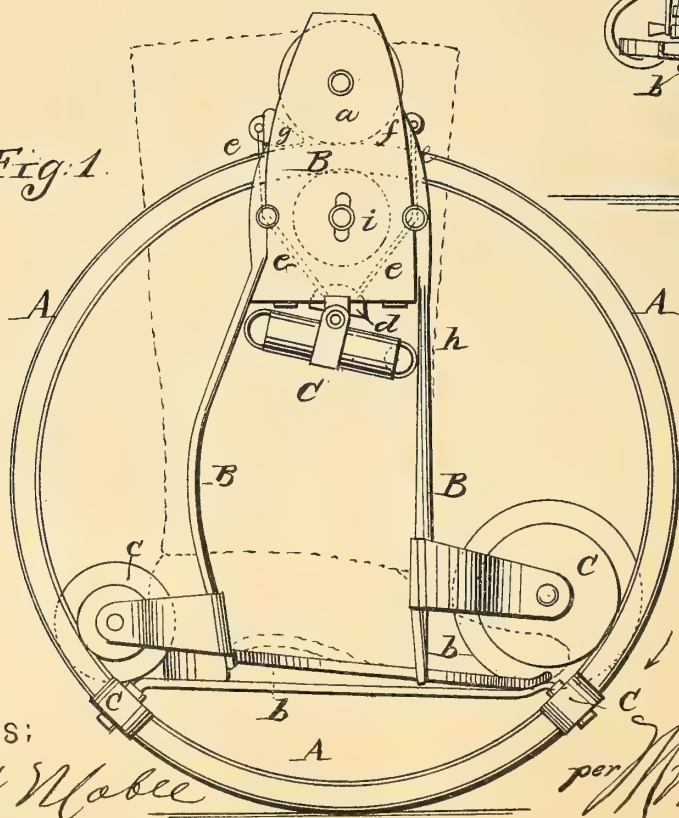


Fig: 1



Witnesses:

Geo. W. Mabee
John Brooks

Inventor:

G. Brownlee

per *[Signature]*
Attorneys.

United States Patent Office.

GEORGE BROWNLEE, OF PRINCETON, INDIANA.

Letters Patent No. 92,936, dated July 27, 1869.

PEDECYCLE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, GEORGE BROWNLEE, of Princeton, in the county of Gibson, and State of Indiana, have invented a new and improved Pedecycle; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side view of my improved pedecycle.

Figure 2 is a vertical transverse section of the same.

Figure 3 is a detail side view, partly in section, of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to a new device, which is to be used for skating on ordinary roads, to be attached to the feet and rolled over the ground.

The invention is also applicable to other vehicles, such as velocipedes and wheelbarrows; and

It consists chiefly in suspending the weight of the rider or load to be conveyed from the top of the wheel or hoop.

The invention consists also in a novel arrangement of self-acting brakes, as applied to the pedecycle aforesaid, and in the application of a balance-tube, containing a ball or other rolling weight for operating said brake.

A, in the drawing, represents a hoop of suitable size, and made of sheet-metal or other suitable material, either solid or hollow, as in fig. 2.

From the top of this hoop is suspended a frame, B, which carries a small wheel or roller, *a*, that rests on the edge of the hoop on top of the same, as shown.

The lower part of the frame B carries a foot-support, *b*, within the hoop, and some side-guard rollers, *c c*, that fit against the faces of the hoop, to prevent lateral displacement of the frame.

C is a tube suspended at its middle by a pin, *d*, from the upper part of the frame, in such manner that it can swing on its pivot. It is, by means of levers *e e* that are pivoted to the frame, connected with two brake-shoes *f g*, respectively, which are in front and rear of the roller *a*, as shown.

The tube, which is closed at its ends, contains a ball, *h*, which can freely roll from end to end of the tube.

The end of the tube containing the ball will be

lowered, and thereby the brake, connected with such lowered end, will be applied to the roller *a*.

One such device is to be applied to each foot of a person, in the manner indicated in fig. 1, and the feet are to be moved in a manner similar to skating.

When the foot is moved forward, to more or less incline forward, the foot C will also be inclined in the same direction, and the front brake *f* will thereby be applied, which will act against *a*, so as to prevent the hoop from rolling backward. When the foot is placed so as to be lower at the heel, it will cause the tube C to swing and apply the rear brake *g*. The hoop is then prevented from turning backward. Thus, when the foot has been pushed forward as far as necessary, it will be so inclined as to apply the brake *g*, whereby it is prevented from slipping further forward.

When the skater strikes back to propel the body forward, the toe is lowered and the front brake applied, whereby the foot is prevented from slipping further back.

By leaving off the brakes, making the hoop of larger size, and arranging a seat within it, in the frame B, the device may be used for a one-wheeled velocipede, to be propelled by hands or feet, in suitable manner, or it may, if desired, be provided with two or more such hoops. The same device may be used for transporting goods on the frame B.

The weight being suspended from the top of the wheel, greater leverage is obtained.

A small roller, *i*, may be arranged within the hoop on the frame B, to fit against the inner edge of the hoop, opposite to *a*, as shown.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. A pedecycle, made and operating substantially as herein shown and described.

2. A vehicle, in which the weight to be conveyed is suspended from the top of the wheel or wheels, substantially as herein shown and described.

3. The brakes *f g*, applied automatically to the bearing-roller *a*, to prevent either backward or forward motion of the hoop, substantially as herein shown and described.

4. The pivoted tube C, containing the ball *h*, to operate the brakes *f g*, automatically, substantially as herein shown and described.

Witnesses: GEORGE BROWNLEE.

CHARLES BROWNLEE,
JAMES THOMSON.

W. R. Morris.

Roller-Skate.

No 93,110.

Patented Jul. 27. 1869.

Fig. 1.

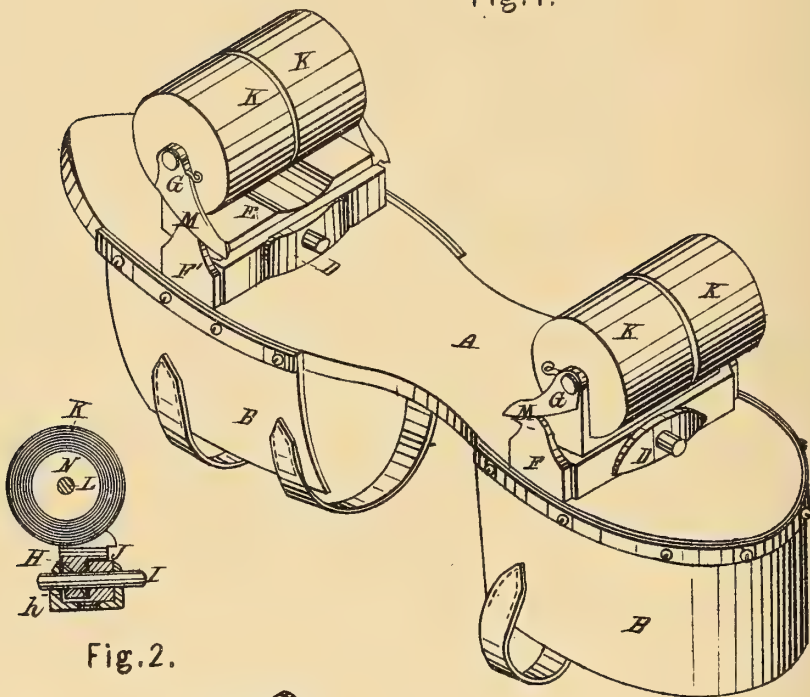


Fig. 2.

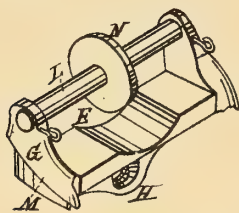


Fig. 3.

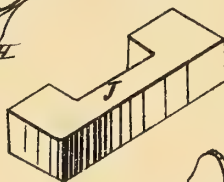


Fig. 4.

Witnesses:

Henry Millward
C. H. Dickles

Inventor:

W. R. Morris
D. P. Holloway & Co.
Attorneys

United States Patent Office.

WILLIAM R. MORRIS, OF CINCINNATI, OHIO.

Letters Patent No. 93,110, dated July 27, 1869.

IMPROVEMENT IN ROLLER-SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, WILLIAM R. MORRIS, of Cincinnati, county of Hamilton, State of Ohio, have invented a certain new and useful Improvement in Roller-Skates; and I hereby declare the following to be a sufficiently full, clear, and exact description thereof, to enable one skilled in the art to which my invention appertains, to make and use it, reference being had to the accompanying drawings making part of this specification.

My invention relates to that class of roller-skates in which the rollers are adjusted for curved lines, by the action of the body of the skater in natural skating movements; and consists in connecting the frame in which the rollers are journalled, to the stock or foot-board, by a shackled joint, and providing said frame with inclined planes, which slide over suitable projections on the stock.

My invention further consists, in combination with these devices, in the provision and peculiar arrangement of a piece of rubber under each roller-frame, for the purpose of preventing a rattling noise in the joints, and returning the frames after each movement to the central position.

In the accompanying drawings—

Figure 1 is a perspective view of the under side of a roller-skate, which embodies my invention.

Figure 2 is a perspective view of the roller-frame detached, and section of the joint.

Figure 3 is a view of the rubber spring.

Figure 4 is a view of the plate, which is secured to the stock, and to which the roller-frame is connected.

A is the stock or foot-board, provided at each end with the customary strap or straps, B.

At each end of the stock A, a plate, C, is firmly secured, which is provided with the jaws D D', for the shackling-hinge joint with the frame E, and is also provided with projections F F', on which the frame G rests, to which the rollers are journalled. The projecting tenon H, which connects with the jaws D D' by means of pin I, does not fill the jaw, and the hole h, in the tenon through which the pin I passes, is "countersunk." (See fig. 2.)

The provision of the wide jaws D D', and countersunk hole h, permits an oscillating movement of the frame G, in any direction.

The space between the projections F F', and the space between the jaws D D', minus the thickness of tenon H, is filled up with the rubber spring J, which fits snugly in between the stock-plate C, and the bottom of the frame G. (See fig. 1.)

This serves the purpose of preventing rattling in the joint between the frame G and plate C, and also serves to return the roller-frame to the central position, after its adjustment by the body of the skater in turning curves.

The rollers K, which revolve loosely on the stationary axle L, are adjusted to turn curves, by the depression of one or the other of the projections F F', in the natural leaning of the body of the skater, the projection F or F' acting upon one of the inclined planes M, on the frame G, and thus compelling the frame to swivel, and so converge or adjust the axle of the rollers as to adapt the said rollers for describing the curve desired by the skater.

The rollers K, are loose upon a single axle, L, and are separated by a loose washer N, which is free to revolve with the rollers, when both are going in one direction; and to either stand still or to revolve, as the particular location of friction may determine, when the rollers are revolving in opposite directions. By this device, much friction is obviated in the ordinary movements of fancy skating.

I claim herein as new and of my invention—

The roller-frame G, provided with tenon H, and inclined planes M, in the described combination, with the projections F F' and jaws D D', the whole being constructed and operating substantially in the manner and for the purposes set forth.

In testimony of which invention, I hereunto set my hand.

W. R. MORRIS.

Witnesses:

HENRY MILLWARD,
CHARLES PICKLES.

UNITED STATES PATENT OFFICE.

N. W. HUBBARD, OF NEW YORK, N. Y.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **96,117**, dated October 26, 1869.

To all whom it may concern:

Be it known that I, N. W. HUBBARD, of New York, in the county of New York and State of New York, have invented a new and Improved Parlor and Sidewalk Skate; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of my improved skate. Fig. 2 is a rear view of the same.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved parlor and sidewalk skate, which shall be so constructed and arranged as to run with little friction, and to pass over obstructions, adapting it for use in the parlor, upon the sidewalk, or upon a street paved with Nicholson or other similar pavement; and it consists in the arrangement of the foot-piece and wheels with each other, as hereinafter more fully described.

A is the foot-piece, to which the foot is secured in the same manner as to an ordinary ice-skate. B are the uprights or standards, the lower ends of which are bent or curved inward and made broad, so that they may be conveniently and firmly attached to the under side of the foot-piece A.

To the upper part of the uprights B are attached, or upon them are formed, outwardly-projecting journals, upon which the wheels C¹ C² revolve. The wheels C¹ C² are made

large, and are arranged, the two former upon the outer side and the latter upon the inner side, of the foot-piece A, as shown in Figs. 1 and 2.

The two wheels C¹ C¹ may be so arranged as to overlap each other, to make the skate more compact, and at the same time allow the use of large wheels.

For an ordinary sized skate I prefer to make the wheels C² C¹ about nine inches in diameter, so that they may easily pass over any unevenness or obstructions upon the surface upon which they are being used. This construction also brings the foot-piece A close to the ground, giving stability to the skates, and enabling them to be used with less liability to strain the foot than when small wheels or rollers are used and placed beneath the foot-piece in the ordinary manner.

If desired, a brace-bar, D, may be extended from the rear part of the inner side of the foot-piece A to the upper end of the inner upright B, to give a better support to the foot. It should be observed that the inner or single wheel should be placed at or near the middle part of the side of the foot, as shown in Fig. 1.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A skate having its three wheels arranged relatively to the foot-piece, substantially as shown and described.

N. W. HUBBARD.

Witnesses:

FRANK BLOCKLEY,
JAMES T. GRAHAM.

N. W. Hubbard.

Parlor Skete.

N^o 96117.

Patented Oct. 26. 1869

Fig. 1.

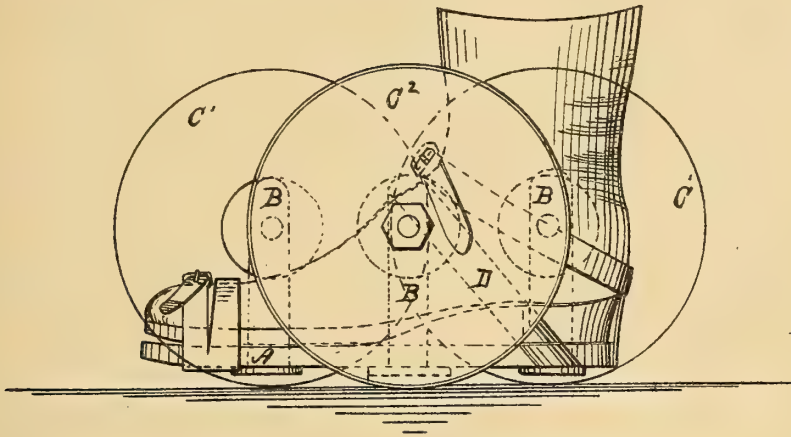
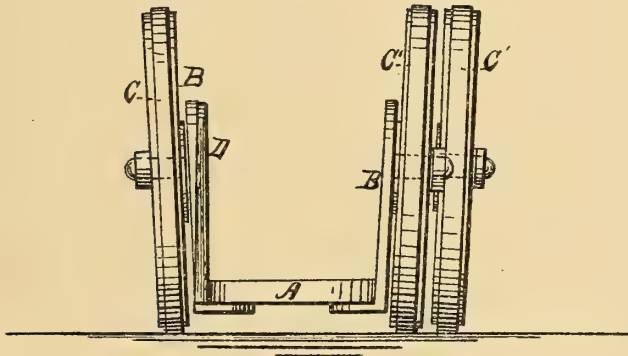


Fig. 2.



Witnesses:

A. W. Almqvist
Alex. J. Roberts

Inventor:

N. W. Hubbard

PER

M. M. H. G.
Attorneys.

170/5

A. J. Gibson.
Comb'd Roller & Skate.
N^o 97075. Patented Nov. 23. 1869.

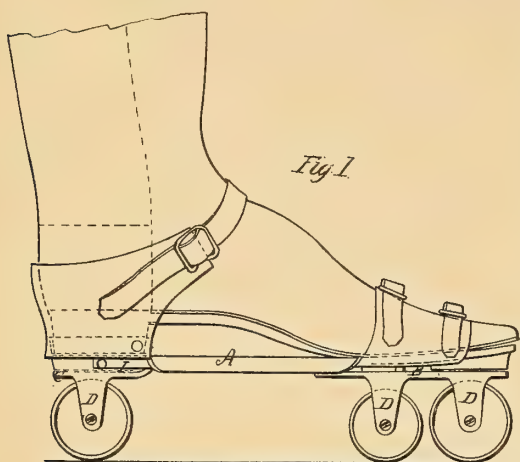


Fig. 1.

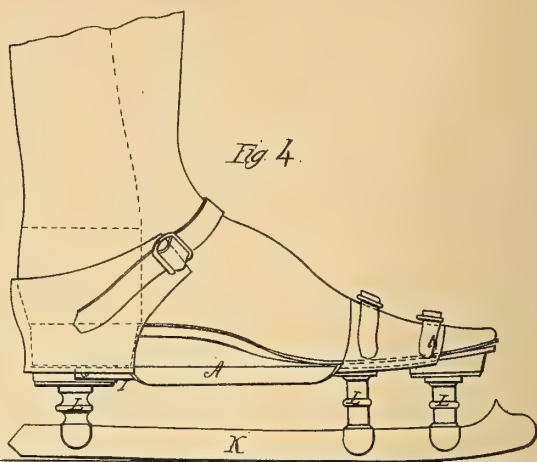


Fig. 4.

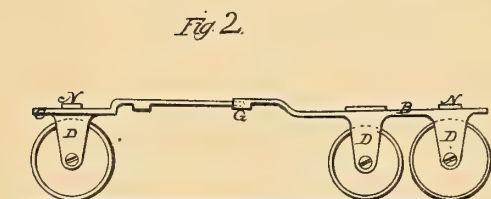


Fig. 2.

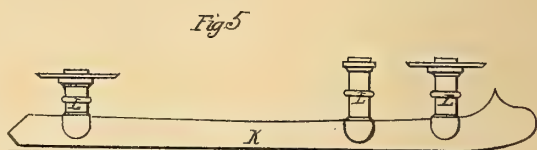


Fig. 5.

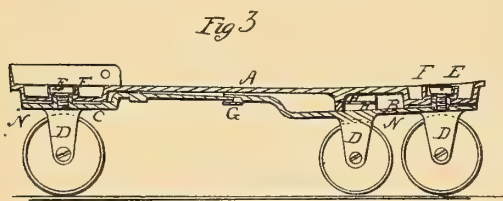


Fig. 3.

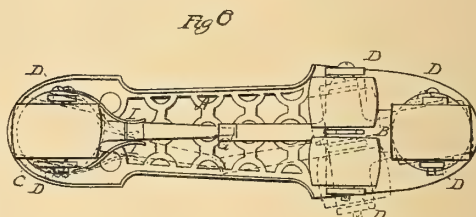


Fig. 6.

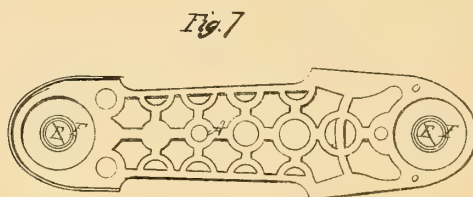


Fig. 7.

Witnesses:

C. L. Fisher.

E. A. Scott.

Inventor:

A. J. Gibson

A. J. GIBSON, OF CINCINNATI, OHIO.

Letters Patent No. 97,075, dated November 23, 1869

COMBINED ROLLER AND ICE-SKATE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, A. J. GIBSON, of Cincinnati, in the county of Hamilton, and State of Ohio, have invented an Improved Combination Roller and Ice-Skate, of which the following is a full and clear description, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 represents a side elevation of my improved roller-skate.

Figure 2 represents the running gear, detached from the foot-board of fig. 1.

Figure 3 is a vertical section of fig. 1.

Figure 4 represents a side elevation of the ice-skate, a runner attached to the same kind of a foot-board as the rollers are in fig. 1.

Figure 5 represents the runner detached from the foot-board of fig. 4.

Figure 6 represents a plan of the bottom of the roller-skate, showing in dotted lines the changed position of the running gear when desired to run a curve.

Figure 7 is a plan of the foot-board.

My invention relates to a new manner of constructing the foot-board of a skate; also, the arrangement of the running gear, to receive rollers for summer-use or runners for winter, which may be easily adjusted for both uses, the object of which is to provide a simple and cheap skate, as will be hereinafter specified.

To enable those skilled in the art to fully understand and construct my invention, I will describe it.

A is the foot-board

B is a front movable circle-plate.

C is rear movable circle-plate.

D are lugs projecting down from the movable circle-plates B and C to fasten the rollers.

E E are screw-bolts to fasten the movable circle-plates B and C, to the foot-board A.

F F are concave washers surrounding the screw-bolts E E.

G is a socket formed in the rear end of the connecting-rod of the movable circle-plate B, to receive the front end of the connecting-rod formed on the front part of the rear movable circle-plate C.

H H are ribs, one projecting down from foot-board A and one projecting upward from front movable circle-plate B, to sustain the centre of the foot-board A, and also the front movable circle-plate B.

I I are springs to restore the movable circle-plate in line with the foot-board when the rollers are not required to run a curve.

K K are steel runners, to attach to the foot-board A, by means of posts L and screw-bolts E E.

Having described the parts by letters of reference, I will now specify the construction and operation.

The foot-board A may be made of wood or metal, concave from the top at the front and rear ends, to

receive the concave washers F F and screw-bolts E E, sufficiently to not obstruct the foot when placed on the foot-board A, as shown in figs. 3 and 1.

A cylinder is formed, projecting downward from the foot-board A at the front and rear ends, directly over the front and rear rollers, to form a circle-plate for the purpose of producing sufficient surface for the movable plates B and C, when fastened together by the screw-bolts E E, to be durable.

The screw-bolts E E are screwed down to a shoulder in the studs N, in the movable circle-plates B and C, to prevent their becoming loose.

The studs N, formed on top of the movable circle-plates B and C, project up through the bottom of the cylinders in the foot-board A, surrounding the screw-bolts E E, to form a journal for the movable plates B and C, and to prevent the wear of the screw-bolts E E.

Near the centre, on the under side of the foot-board A, is a circular rib to sustain the weight on the foot-board. Also, directly under it, is another circular rib, formed on the upper side of the movable circle-plate C. They serve the same purpose as a fifth-wheel of a common carriage.

The front movable circle-plate B is designed to receive one roller in front, in the centre, and two in the rear, attached to the same plate, side by side, with a connecting-rod of sufficient length to couple in the centre between the front and rear single rollers by means of a socket, G.

The rear movable circle-plate C is designed to receive one roller, with a connecting-rod of sufficient length to couple in the centre between the front and rear rollers, formed pointed to work in the socket before mentioned.

The runners K K are fastened to the foot-board A by means of the screw-bolts E E in the posts L L.

The object of placing the two centre rollers side by side, and out of line with the front and rear rollers, is to cause the front and rear rollers to turn to the right or left, as desired, by rocking the whole skate, and giving increased pressure to either one or the other of the centre rollers, forcing them sufficiently into line with the front and rear rollers, to turn as desired.

The front and rear movable circle-plates being pivoted to the foot-board, directly over the front and rear rollers, allows the two centre rollers to be turned to the right or left, thereby turning the front and rear rollers in a manner to track with the centre rollers.

The springs I I restore the movable circle-plates B and C into line with the foot-board A when desired to run the skate in an upright position straight forward.

The advantage of constructing the foot-board in this manner is that it is well adapted to receive the movable circle-plates for receiving rollers that may be

Assignor to himself, B. J. Thurston & T. A. Harrow of same place

easily turned on any curve, and also runners for ice, fastened rigid by means of the same screw-bolts that fasten the rollers to the foot-board. In either case they are easily adjusted, cheap, and simple in construction, beautiful in appearance, and perfect in operation.

The foot-board has concave circle-plates formed at the front and rear ends to admit of receiving movable plates B and C with rollers attached by means of screw-bolts, to allow the plates to be turned on any curve, constituting a running gear, and also to admit of receiving runners for ice, easily attached or detached, as the case may require.

Having described my improved combination-roller, and ice-skate, the construction, arrangement, and

operation, I make the following claim, which I desire to secure by Letters Patent:

1. The foot-board A, having upon its under side a curved rib, H, and a circular bearing-plate at each end, in combination with circle-plates B, H, and C, adapted to receive rollers.

2. The foot-board A, having depressions in each end, concave washers F, and screw-bolts E, in combination with the circle-plates or hangers B D and C D, or with the runners K L, as and for the purpose described.

Witnesses:

A. J. GIBSON.

J. FREON,

G. K. ROBERTS

H. Robbins,

Roller Skate.

No. 102971.

Patented May 10, 1870.

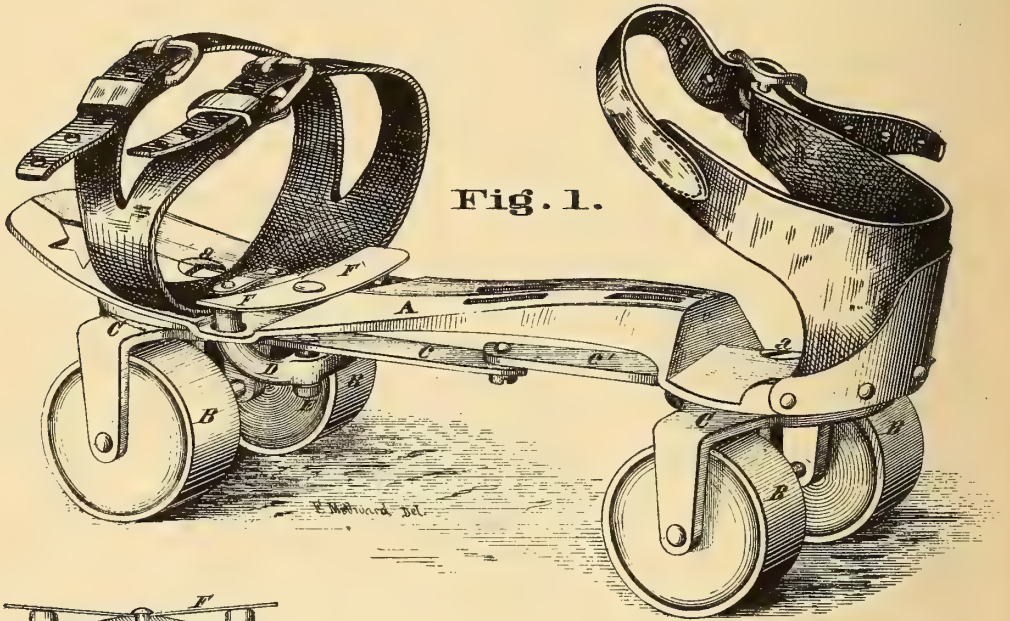


Fig. 1.

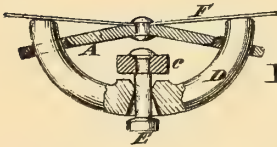


Fig. 3

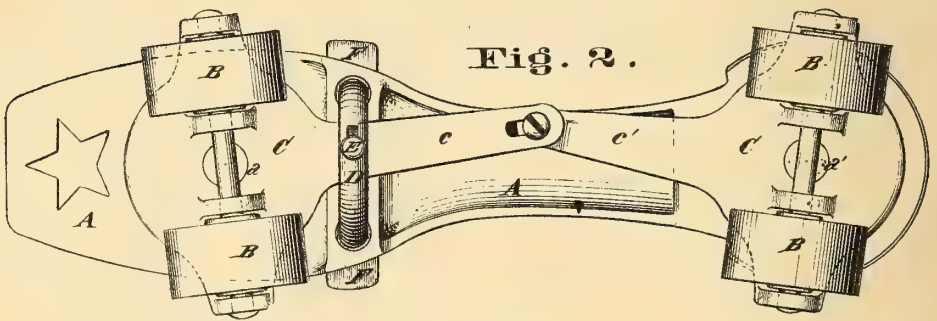


Fig. 2.

Attest,
Henry Millward
John De McCarren

Inventor.
Hiram Robbins
By H. Millward
Attorney.

UNITED STATES PATENT OFFICE.

HIRAM ROBBINS, OF CINCINNATI, OHIO, ASSIGNOR TO HIMSELF AND WM. R. MORRIS, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **102,971**, dated May 10, 1870.

To all whom it may concern:

Be it known that I, HIRAM ROBBINS, of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Improvement in Roller-Skates; and I hereby declare the following to be a sufficiently full, clear, and exact description to enable one skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the class of roller-skates in which the rollers are automatically adjusted to run in either straight or curved lines by the natural motion of the body in the act of skating; and it consists, in connection with swinging roller-frames connected by levers together, of a spring foot-pad and oscillating arc connected to and operating the levers, the spring-pad serving not only to communicate the pressure from the foot to the levers, but to return the levers to the central position after the pressure has been withdrawn from either side.

In the accompanying drawings illustrating my invention, Figure 1 is a perspective view, and Fig. 2 a plan, of the under side of the skate. Fig. 3 is a cross-section of the skate, showing the spring and arc device for operating the levers.

A is the stock of the skate, to which the roller-frames are attached. The stock is so constructed that the foot of the skater can rock or tilt on it when the body is leaned in turning curves. In other words, the stock is made V-shaped or "crowning" on the upper side.

The rollers B are journaled in the frames C C', and the frames are pivoted to the stock A at *a a'* in such a manner as to permit horizontal oscillation. The frames C C' are connected together by levers *c c'*, which cross each other at the ends, and are secured in the manner shown, for simultaneous vibration. The adjustment of the levers *c c'* serves to direct the wheels in straight or curved tracks, agreeing

with the bodily motion of the skater, and this adjustment is accomplished automatically by means of the following peculiar device.

The stock A is perforated at each side for the reception of the arc D, which rests upon the pin E, the latter being firmly secured to the lever *c* in the manner shown. A flat steel spring, F, is riveted or otherwise secured to the center of the stock A, and rests upon the arc D at the ends, as shown in Fig. 3. The spring F receives the pressure of the foot, and a preponderance of pressure upon either side, such as is produced by the leaning of the body in skating a curve, serves to force (by means of the arc) the levers *c c'* to the opposite side to an extent agreeing with the bodily inclination and consequent amount of unequal pressure. When the pressure is relieved from either side by the removal of the foot from the floor or straightening up the body the spring F serves to return the levers to the central position.

I am aware that springs have been used in skates heretofore for returning adjustable rollers to the central position, but the spring in these serves no part in the automatic adjustment of the rollers from side to side.

I am also aware that the stocks of roller-skates have been so constructed as to permit of the rolling or tilting of the foot independent of the stock, and that roller-frames connected by levers for simultaneous action in swiveling have been used heretofore; but

What I claim herein as new and of my invention is—

The spring-pressure pad F and oscillating arc D, connected to and operating the swiveling roller-frames C C' *c c'*, in the manner and for the purpose described.

In testimony of which invention I hereunto set my hand.

HIRAM ROBBINS.

Witnesses:

FRANK MILLWARD,
E. BOYD.



John Lemman.

Roller Skate.

PATENTED MAY 24 1870

103346

Fig. 1.

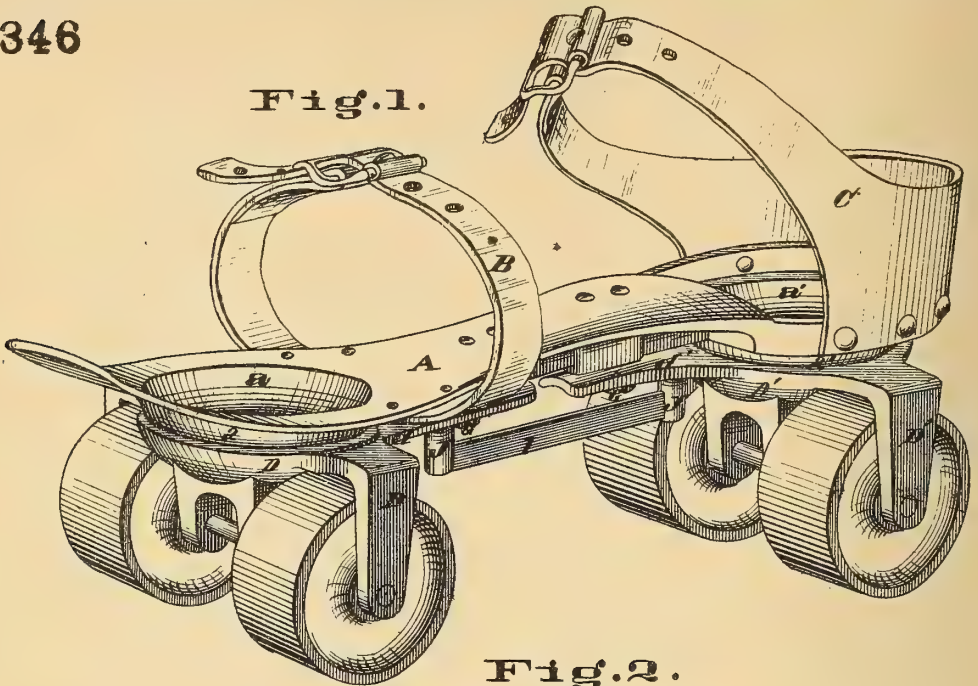


Fig. 2.

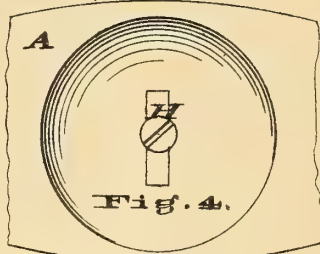
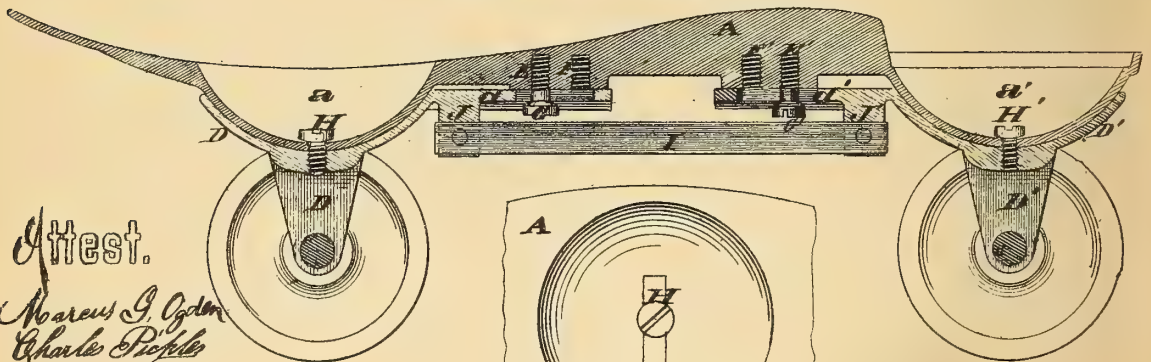
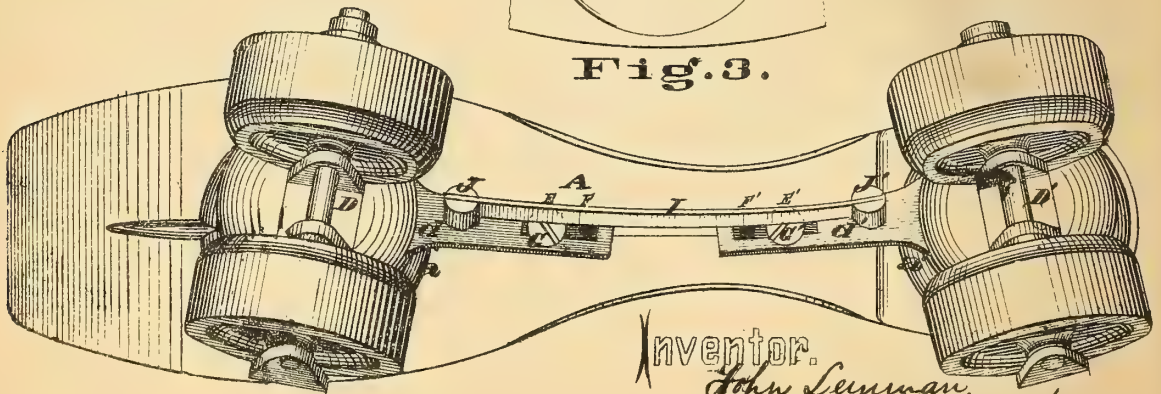


Fig. 3.

Attest.

Marcus J. Ogden
Charles Pickle



Inventor.

John Lemman
By H. Millward
Attorney

UNITED STATES PATENT OFFICE.

JOHN LEMMAN, OF CINCINNATI, OHIO.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **103,346**, dated May 24, 1870.

To all whom it may concern:

Be it known that I, JOHN LEMMAN, of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Roller-Skates; and I hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable one skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawing, making part of this specification.

My invention relates to the class of broad-base roller-skates the rollers of which are adjusted to turn curves by the natural inclination of the body in skating curves; and my invention consists in the provision of ball-and-socket joints connecting the roller-frames to the stock of the skate, which device, in connection with pivoted levers attached to the sockets, enables the stock of the skate, by rolling in the sockets in obedience to the motion of the body of the skater, to so adjust the rollers as to compel them to follow the direction desired by the skater.

My invention further consists, in connection with the ball-and-socket device for the roller-frames of a flat steel spring, in connecting the two roller-frames together in such a manner that the roller-frames will be returned by the spring to the central position after being adjusted to turn or describe curves.

In the accompanying drawing, Figure 1 is a perspective view of a roller-skate embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan of the under side of the skate, showing the position of the rollers and frames in describing curves. Fig. 4 is a top-plan view of one end of the stock.

The foot-stand or stock A of the skate is formed with downwardly-projecting spherical segments *a a'*, which are concave on the upper side, as shown, leaving a uniform thickness of metal between the convex and concave surfaces. The stock is secured to the foot of the skater by straps B C or any other preferred method.

The rollers, which are preferably four in number, are journaled in the frame D D', in the manner shown, in such a way as to per-

mit of the withdrawal of the axles for lubrication.

The frames D D' are concave on the upper side to fit over the spherical segments *a a'*, forming what is known as "ball-and-socket joints."

The frames D D' are also formed with projecting levers *d d'*, which are loosely connected to the stock A at E E' or F F' by set-screw pivots G G'.

The levers *d d'* are slotted, as shown, to permit of the changing of the pivots G G' from E E' to F F', in order to diminish the divergence of the levers from the center line of the stock when the stock is tilted.

The frames are connected to the stock A, at the center of the ball-and-socket joints, by set-screws H H', the stock being slotted across, as shown in Fig. 4, to permit the lateral adjustment of the roller-frames.

A spring, I, is fitted into the slotted projections J J' of the roller-frames, which serves to return the frames to the central position after being forced by the rolling of the stock A into position for curves. This provision is not essentially necessary, as the skate is complete without it; but it is preferred by some skaters, as it prevents "shackling."

In the operation of this skate the center of the concave of the roller-frames D D' is in line with the center line of the stock when skating straight. When skating curves the stock A is rolled or tilted by the necessary inclination of the body for curves, and both frames D D' are forced, by the action of the ball-and-socket joints, to the side of the skate on which the body leans. The ends of the levers *d d'* being retained by the pivots G G' in the center line of the stock, the axles of the rollers are necessarily twisted or cramped out of right angles with the skate-stock and compelled to assume the required position for a curve, the degree of adjustment, of course, always depending upon the extent to which the body of the skater is inclined, as in other skates of this class.

It will be seen that the oscillating frames D D' are not connected to the stock by small pintles or axles, upon which all the strain is sustained, as in other skates with tilting foot-

boards, but the connection is broad and solid, with the best known form for wearing surface—viz., ball and socket.

Claims.

1. In connection with the stock A, provided with spherical segments *a a'* and pivots G G', the concave roller-frames D D' *d d'*, combined, arranged, and operating substantially in the manner and for the purpose specified.

2. In connection with the oscillating roller-frames D D' J J', the provision of the spring I, connected and operating in the manner and for the purpose described.

In testimony of which invention I hereunto set my hand.

JOHN LEMMAN.

Witnesses:

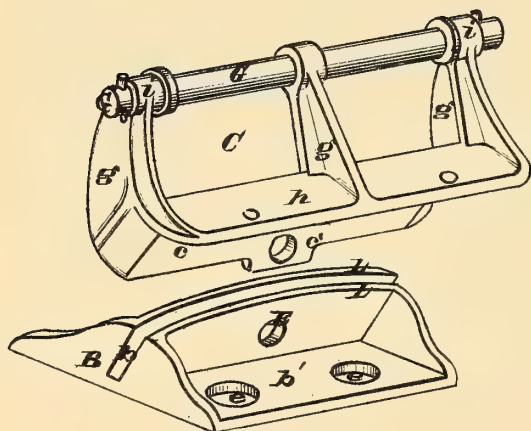
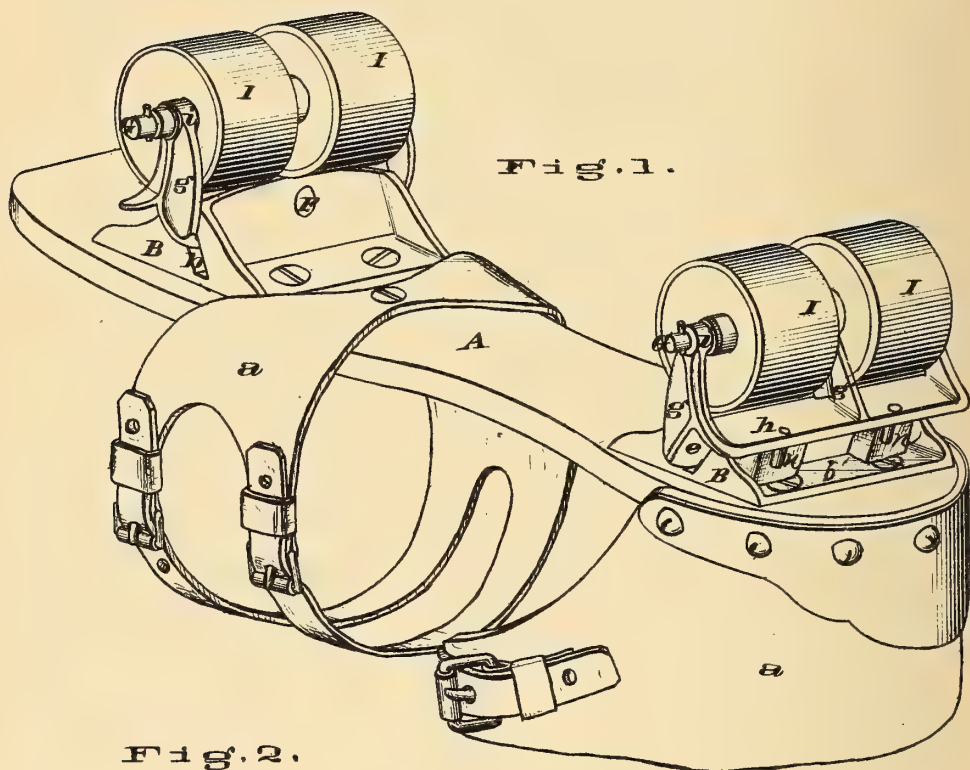
FRANK MILLWARD,
EZRA COPE.

Bradley & Mansbrough,

Roller Skate.

No. 103419.

Patented May 24, 1870.



Attest.

W. H. Wood
Notary Public

Inventor.

H. W. Mansbrough
R. J. Bradley

UNITED STATES PATENT OFFICE.

RICHARD T. BRADLEY AND HENRY W. WANSBROUGH, OF CINCINNATI, OHIO,
ASSIGNORS TO R. T. BRADLEY AND C. A. SCOTT, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **103,419**, dated May 24, 1870.

We, RICHARD T. BRADLEY and HENRY W. WANSBROUGH, of Cincinnati, Hamilton county, Ohio, have invented certain Improvements in Roller-Skates, of which the following is a specification:

Nature and Object of our Invention.

The first part of our invention relates to an improved manner of constructing a rocker or bed-frame, provided with suitable attachments to support the rocker, which is attached to the bed-frame by a pivot, the object of this part of the invention being to furnish a strong attachment of the rollers to the skates.

The second part of this invention relates to the combination of a rocker with peculiarly-constructed supports and journals for the rollers to revolve upon, and attached to the rockers, and so as to give the skate a lateral curve to right or left, enabling the operator to turn easily and gracefully without strain of the foot and with slight effort, the roller-frames being constructed so as to employ wide rollers, which require less effort for the operator to retain his equilibrium or balance; and, last, in combining rollers with improved rockers and rocker-bed frame, in such a manner as to secure a skate simple and cheap in its construction, with proper adaptation of parts to secure ease of movements and perfect control of the skates with little effort to the operator.

Description of the Accompanying Drawing.

Figure 1 is a perspective view of the skate embodying our invention. Fig. 2 is a plan of the rocker bed-frame and rocker and roller axle.

General Description.

A is the foot-board, which may be made of wood or metal, and of sufficient strength to overcome the strain exerted by the operator upon the skate. *a a* are straps provided with buckles, to secure the skate to the foot.

B B are the rocker bed-frames, which should be securely attached to the foot-board by screws or other suitable means. *b'* is a flange, with holes *e e* for screws or rivets to attach the bed-frame to the foot-board. *b* is a groove or gain made by two parallel projecting lips, L L,

springing from flange *b'*. A bearing, E, for the axis F is drilled or made through the lips at a right angle with the plane of these inclined lips L L, which should be at an angle of about sixty degrees from the plane of the foot-board, as shown in Fig. 2.

C is the rocker-frame, composed of the following parts: *c* is the rocker, which extends across the foot-board, or nearly so, and is designed to fit loosely and work in the groove *b*. *c'* is the tenon, with a bearing for the pivot or axis F, corresponding to the bearing E. *h* is a flange or ledge attached to the standards *g g g*. These standards have journal-bearings *i i i*, to support the axis G, on which the rollers I I revolve. Tenon *c'* should have the same angle as the groove *b*, in which it is designed to work, and parallel with the rocker *c* the pivot or axis F passes through the bearing E of the lips L L and tenon *c'*, and forms a pivot-joint for the rocker *c*, and attaches the rocker-frame to the bed-frame.

The rocker bed-frame B and the rocker-frame C should each be made of metal and in one piece. (Malleable iron or "gun metal" is preferred.)

n n, Fig. 1, are pieces of rubber, held in position between flanges *b* and *b'* by pins, and act as springs to bring the rockers to a plane parallel with the foot when pressure is removed.

The angle of the groove *b* and rocker *c* and tenon *c'*, as they are placed, may be varied, the greater the angle from a vertical line the shorter will the skate turn when tilted.

As the foot-board is tilted, (the wheels remaining on the ground or floor,) each axis of the wheels is caused to swing in a horizontal plane, so that they no longer remain parallel, or in planes cutting the foot-support at right angles, but they lie in radii (one in one radius and the other in another) of the circle in which the skate will then move.

We deem the angle shown in Figs. 1 and 2 the proper one for general use.

Mode of Operation.

The skates should be secured to the feet sufficiently tight to prevent the foot from slipping, but not so tight as to "draw" or strain the muscles. By change of equilibrium, or by similar efforts to those practiced in the art of

ice-skating, the skater rocks or tilts the foot-board, and moves in straight or curved lines at will.

We claim as our invention—

1. The peculiar rocker bed-frame B, composed of the inclined lips L L, and groove *b*, and flange *b'*, substantially as herein set forth.

2. The rocker-frame C, when composed of the following parts: rocker *c* and inclined tenon *c'*, with inclined flange *h* and standards *g g g*, constructed and arranged as herein set forth.

3. The combination of the above-described rocker bed-frame B and rocker-frame C with the skate A and the rollers I I, substantially as herein set forth.

R. T. BRADLEY.

H. W. WANSBROUGH.

Witnesses:

HIRAM ROBBINS,

E. E. WOOD.

Freeman & Carkeet,

Parlor Skate.

No. 106,045.

Patented Aug 2. 1870.

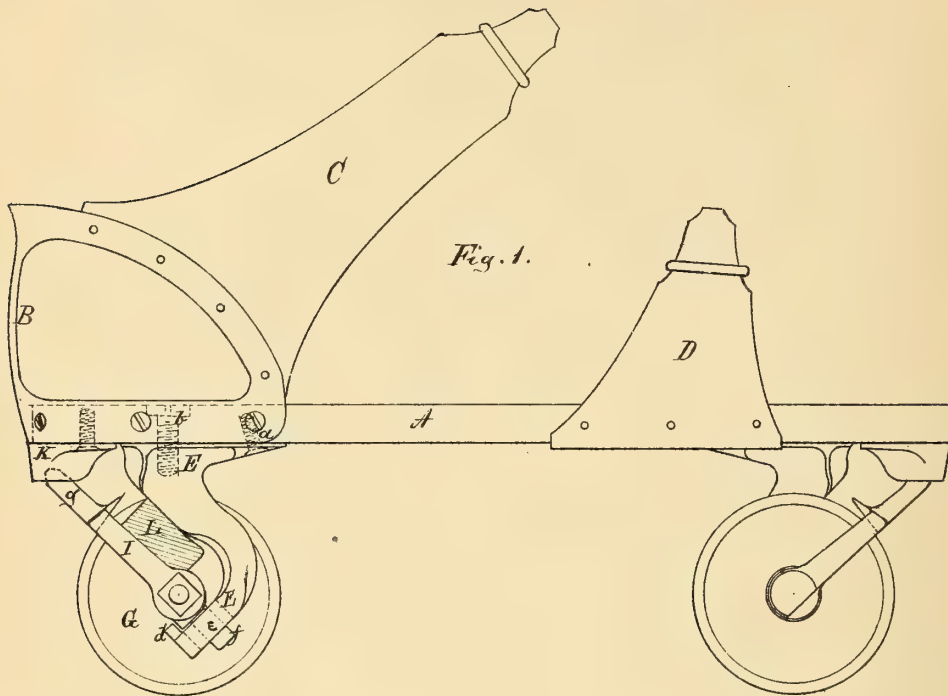


Fig. 2.

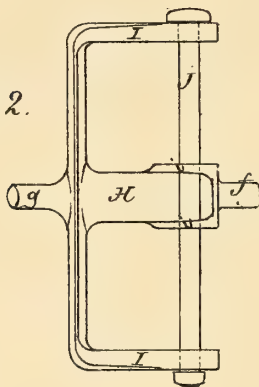
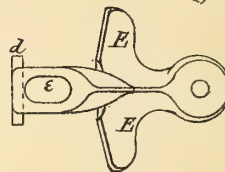


Fig. 3.



Witnesses:

W. M. Brooks

W. S. Thornton

Inventors.

James A. Freeman
James H. Carkeet.

W. H. Alexander
att'y

UNITED STATES PATENT OFFICE.

JAMES A. FREMON AND JAMES H. CARKEET, OF MONTGOMERY, ALABAMA.

ROLLER-SKATE.

Specification forming part of Letters Patent No. 106,045, dated August 2, 1870.

To all whom it may concern:

Be it known that we, JAMES A. FREMON, and JAMES H. CARKEET, of Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Roller-Skates; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of our invention consists in the construction and arrangement of the devices whereby the rollers or runners are attached to the foot-support of a skate in such a manner that they may be swung to run the skate in a curved line, to the right or left.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of our improved skate, with one hind wheel removed; Figs. 2 and 3 are detached views of the truck, in which the rollers or runners are held.

A represents the foot-board or foot-support, B the metallic heel-frame, C the heel-strap, and D the foot-strap, of a roller-skate, all constructed and arranged in any of the known and usual ways.

On the under side of the foot-board A, at the point where it is desired to have the rear rollers, is secured a casting, E, by means of a screw, *a*, passing upward into the foot-board, and a headed bolt or screw, *b*, passing downward through the foot-board into the casting, the head of said bolt or screw being counter-sunk in the foot-board, so as to present an even surface.

The casting E has a comparatively large flat surface on top where the foot-board rests, and its center then extending downward is curved forward and then toward the rear, where it is flattened, and provided with an elongated slot, *e*, as shown in Fig. 4. The shape of the casting E is fully shown in Fig. 2, from which it will be observed that the slotted portion of the casting stands at an angle of about forty-five degrees. At the rear end of the casting, immediately above and in rear of the slot *e*, is a flange, *d*, running across the end and pro-

jecting on both sides, for a purpose that will be presently described.

The rollers G G are placed in a frame constructed in the following manner: A center-bar, H, of the same width as the intended distance between the two rollers, is, at its upper end, provided with a cross-bar, I, extending on both sides, and its ends bent so as to run parallel with said center-bar. The rollers G G are then placed one on each side of the center-bar H, and the axle J passed through the ends of the bar or arm I, and through the centers of the rollers. It also passes through ears *i i*, formed upon the upper side, at the lower end of the central bar H. At the lower end of the central bar H is a pin or pivot, *f*, and at the upper end is another pivot, *g*. The lower pivot *f* is inserted in the slot *e* in the casting E, while the upper pivot *g* is inserted in a socket or bearing, K, secured at the heel on the under side of the foot-board A.

Between the center-bar H of the roller frame and the casting E is inserted a rubber block, L, which is compressed between said bar and casting when put together, and acts as a spring to hold the roller-frame with the rollers in proper position.

By the motion of the skater's foot, the roller-frame H I is turned upon its pivots toward either side, so that the skate may be run in a curved line to the right or left. The roller-frame does, in fact, only turn on one of its pivots, namely, the upper pivot, *g*, which is inserted in the socket K, while at its lower end the projecting end of the flange *d* bears against the back of the center-bar H, moving the lower pivot *f* forward in the slot *e*.

By the motion of the roller-frame to either side, that portion of the rubber L on the side toward which the frame turns, is still further compressed, while on the other side it expands; hence, as soon as the force which caused the turning of the roller-frame is removed or ceases to operate, the rubber will cause the roller-frame to resume its proper position under the skate. The truck under the foot or toe of the skate is constructed in precisely the same manner, only turned in the opposite direction, as shown in Fig. 1.

The advantages of our improvement may be described as follows: The projecting flange or cross-bar *d*, at right angles to the slot *e*, cor-

responds with another horizontal projection upon the wheel-carriage above the pivot *f*, the object of which is to keep the wheel-carriage in a horizontal position upon the platform or foot-board of skate, or to right the wheels on platform by elastic action of the rubber pad. The object of the slot *e* is to allow the separation of the two straight bearings or horizontal bars, and at the same time to allow pressure to be made upon the rubber pad, the ends of the slot to restrict the motion of spindle of the wheel-carriage vertically. The construction of the center-piece admits of greater oscillation of wheel-carriage, and admits also the use of larger rollers than usual, the advantages of which are rapidity of motion with much greater ease of action to the skater, diminishing the tendency to heat, at the same time not removing the foot of the skater farther from the floor. The angle of oscillation being so much greater, admits much more ease to the skater in turning curved lines.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The hanger *E*, provided with slot *e* and cross-bar *d*, in combination with center-bar *H*, pivot *f*, and cushion *L*, all constructed and arranged to operate substantially as and for the purpose set forth.

2. The wheel-carriage *H I*, having pivots *f g*, in combination with the slotted hanger *E*, socket *K*, and rubber cushion *L*, all arranged as shown, for the purpose set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

JAMES A. FREMON.
JAMES H. CARKEET.

Witnesses:

DANL. SAYRE,
WM. S. THORINGTON.

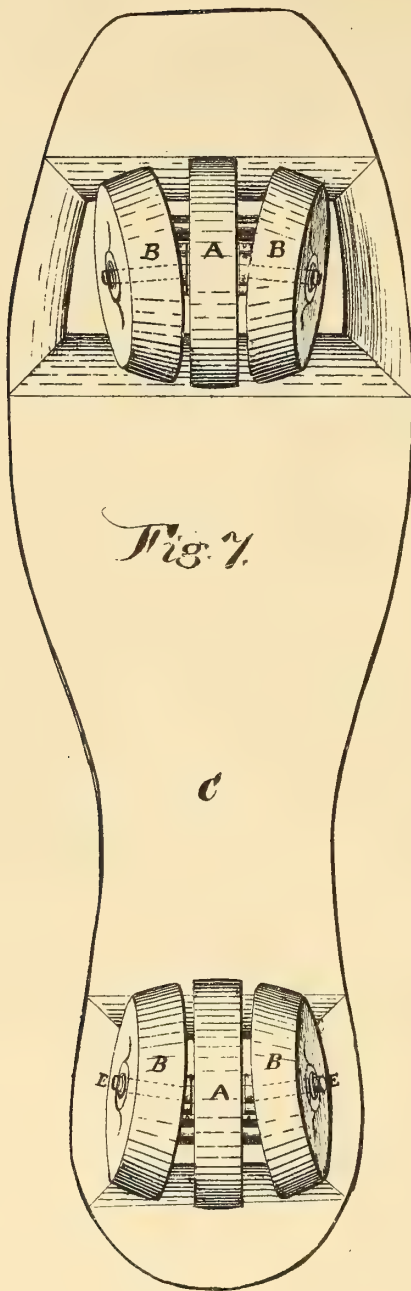
J. Pollitt,

2. Sheets. Sheet 2.

Parlor Skate.

No. 108,184.

Patented Oct. 11. 1870.



WITNESSES.

Daniel H. Bonfley

R. H. Lancaster.

John Pollitt INVENTOR.

J. Pollitt,

Parlor Skate.

No. 108184.

Patented Oct. 11. 1870.

Fig. 1.

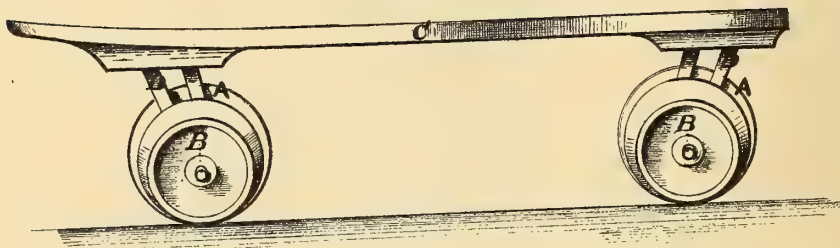


Fig. 2

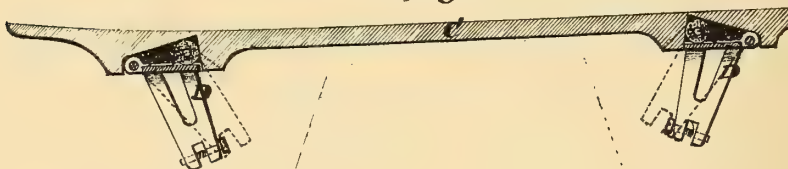


Fig. 3

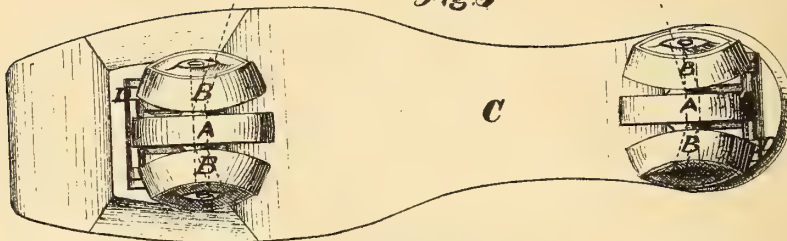


Fig. 4

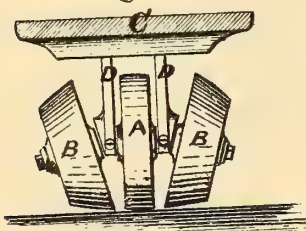
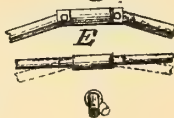


Fig. 5.



Fig. 6



WITNESSES.

Sam. H. Kniffen
O. F. Mayhew

John Pollitt. INVENTOR.

UNITED STATES PATENT OFFICE.

JOHN POLLITT, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF AND
LYMAN MARTIN, OF SAME PLACE.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **108,184**, dated October 11, 1870.

I, JOHN POLLITT, of Indianapolis, in the county of Marion and State of Indiana, have invented certain Improvements in Roller-Skates, of which the following is a specification:

Nature and Objects of the Invention.

My invention consists in the construction and arrangement of the axles and rollers of roller-skates, combined with the mode of hanging the same to the foot-stock, in such a manner as to adapt them to run in straight lines, or describe curves, by the movements of the body, without in any manner depending upon the "canting" of the foot-stock to adjust or cramp the rollers so as to describe curves.

Description of the Accompanying Drawing.

Figure 1 is a side elevation of a roller-skate embodying my invention. Fig. 2 is a vertical longitudinal section through the center of the foot-stock of the skate, showing the mode of attaching and arrangement of the downward-projecting pintles or hangers in which the bent axles and rollers are hung. Fig. 3 is an inverted or bottom view of the skate. Fig. 4 is a vertical transverse section of the same. Fig. 5 is a detached detail view of the hanger or pindle in which the axles are hung. Fig. 6 is a detached view of the bent axle. Fig. 7 is an inverted view of the skate, showing the position of the hangers, axles, and rollers when the weight of the body has compressed the springs *e*, and turned the hangers from their perpendicular position, and thus turned the bent axles toward each other, for the purpose of describing curves.

General Description.

The wheels constituting the forward and rear trucks of the skate are three in number, the center one, A, revolving in a vertical plane to the foot-stock, and the outside ones, B, at an angle thereto, so arranged that as the skate is canted by the natural movements of the body in describing curves, the outside wheels are brought in contact with the floor. The bevel of the outside wheels, combined with the plane of their rotation, serves to carry the skates in curved lines, which are governed by the inclination of the body, and in harmony with such inclination as is requisite to equalize the center of gravity and momentum of the body.

The outer arms of the axles are bent downward, and the outside wheels, B, are beveled to correspond with the angle of the axles, except that the bevel of the wheels is somewhat greater, so that when the skate is perpendicular the outside wheels do not touch the floor.

The hangers in which the axles and wheels are hung are hinged by one side to the foot-stock, as shown, the opposite side resting against a rubber spring, *e*, in a recess formed in the stock. This spring is designed to be of sufficient strength that when the weight of the body is resting equally upon both skates, the hangers will be maintained in the proper position to keep the bent arms of the axles turned downward; but when the weight of the body is thrown principally on one foot, as in describing curves, the springs will be compressed, allowing the hangers to tip, the front one backward and the rear one forward, thus turning the bent arms of the axles toward each other, and bringing the wheels into position to describe a shorter curve. Curves may be described by means of the bent axles, in combination with the beveled wheels, without the vibrating movement of the hangers. This movement of the trucks does not in any way affect the running of the skate in straight lines, and is only brought into use in combination with the beveled wheels and canting of the skate in making curves.

In order to prevent the rollers from slipping on the floor, I propose inserting bits of wire in their periphery, that project slightly therefrom.

A and B are the rollers; C, the foot-stock; D, the hinged hanger, and E the bent axle.

Claims.

I claim as my invention—

1. The bent axles E, substantially as and for the purpose set forth.
2. The bent axles E and rollers A B, in combination with the hinged hanger D, all constructed and arranged substantially as set forth.

JOHN POLLITT.

Witnesses:

DAN. W. KINFLE,
O. F. MAYHEW.



T. F. Leak,
Parlor Skate.
No. 109026. Patented Nov. 8. 1870.

Fig. 1

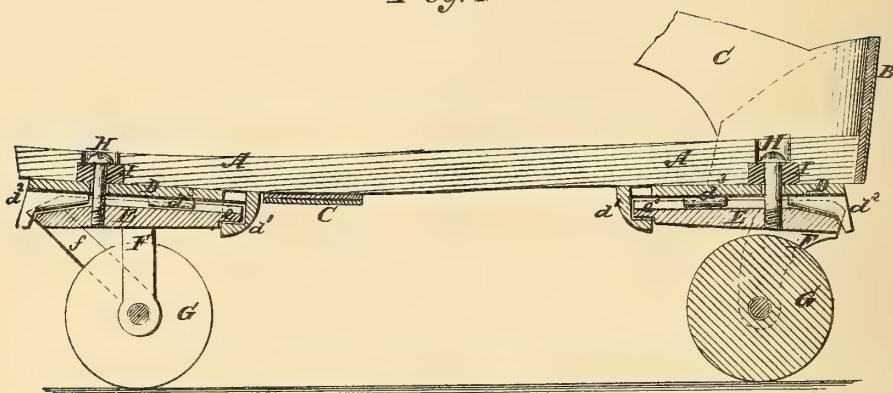


Fig. 2

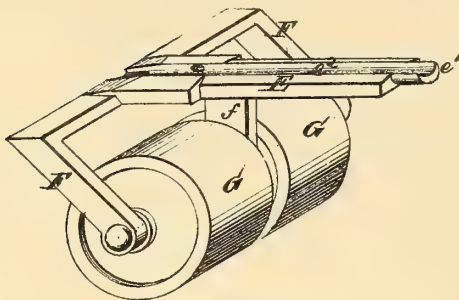
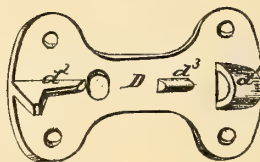


Fig. 3.



Witnesses :

E. W. H. H.
L. S. H. H. H.

Inventor:
T. F. Leak
per *Wm. L. H.*
Attorneys.

United States Patent Office.

TILMAN F. LEAK, OF MONTGOMERY, ALABAMA.

Letters Patent No. 109,026, dated November 8, 1870.

IMPROVEMENT IN PARLOR-SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, TILMAN F. LEAK, of Montgomery, in the county of Montgomery and State of Alabama, have invented a new and useful Improvement in Parlor or Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is detail longitudinal section of a skate illustrating my invention.

Figure 2 is a detail perspective view of the forward roller-frame and rollers.

Figure 3 is a perspective view of one of the plates attached to the skate-wood.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved parlor or roller-skate, which shall be simple in construction and reliable in use, being so constructed that the wood of the skate may rock upon the roller-frames to enable the said wood to rock to accommodate itself to the necessary movements of the foot; and

It consists in the construction and combination of various parts of the skate, as hereinafter more fully described.

A is the wood of the skate, upon which the foot rests, and which is provided with a heel-plate, B, and straps C, for securing it firmly to the foot in the ordinary manner.

To the under side of the forward and rear parts of the wood A are securely attached metal plates D, which have sockets d^1 formed upon their under sides near one end, and inclined and shouldered projections d^2 , with rounded edges formed upon them near their other ends.

Upon the middle part of the under side of the plates D are formed projections d^3 with rounded edges.

E is the base-bar of the roller-frames, upon one end of which is formed a half-round tenon, e^1 , to enter and rock in the socket d^1 of the plate D.

Upon the upper side of the bar or plate E is formed

a longitudinal groove, e^2 , in which rest the rounded edges of the projections d^2 , as shown in fig. 1.

The forward edge of the upper side of the bar or plate E is beveled off, as shown in figs. 1 and 2, to rest against the shoulder of the projections d^2 , and sustain the longitudinal push of said bar or plate E.

To the ends of the bars or plates E, furthest from the tenons e^1 , are attached, or upon them are formed, arms F, to and between the lower ends of which are pivoted the rollers G, the arms F of the rear plate E being at such a distance apart as to receive a single roller, and the arms F of the forward plate or bar E being at such a distance apart as to receive two rollers, G.

The middle part of the forward bar or plate E has a third arm, f , attached to it, which projects in such a direction that its outer end may be midway between and in a line with the outer ends of the arms F, to support the middle part of the shaft upon which the two rollers G work, and, at the same time, to keep the said rollers apart.

The bars or plates E are held in place upon the plates D by the screws H, which pass through the wood A through rubber blocks I placed in recesses in the under side of the wood A, through holes in the plates D, and screw into holes in the plates or bars E, thus allowing the roller-frames to rock in their seats, while being, at the same time, firmly secured in place.

This construction of the skates allows the skater to stand more firmly upon the skates, enables him to turn in less space, and causes the skates to yield more naturally to the movements of the ankle, thus enabling the skater to skate more easily, naturally, and gracefully than with skates otherwise constructed.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The socket-plate D d^1 d^2 d^3 , applied to the base-bar E e^1 e^2 of a parlor-skate, as described, and for the purpose set forth.

TILMAN F. LEAK.

Witnesses:

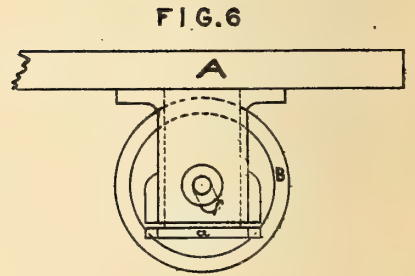
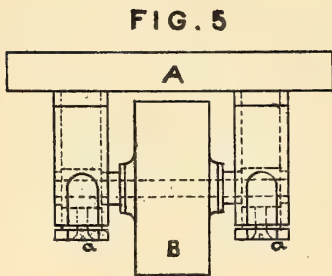
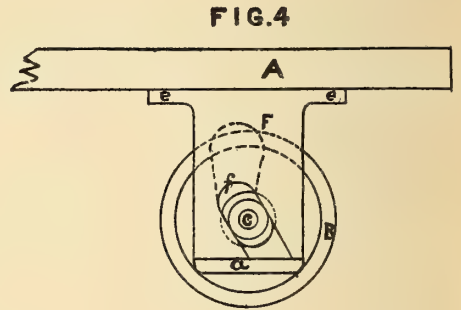
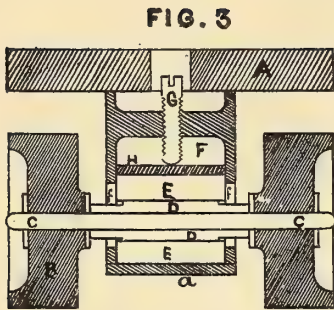
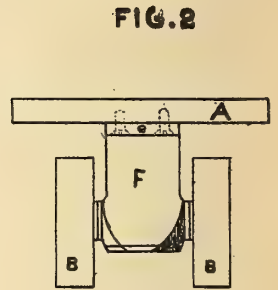
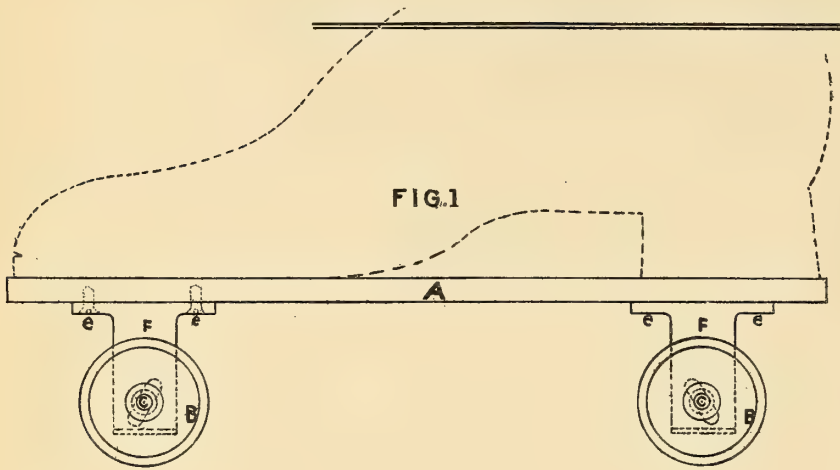
M. B. CAMPBELL,
S. D. HOLT.

M. H. Kimball,

Parlor Skate.

No. 110,858.

Patented Jan. 10. 1871.



WITNESSES

George Pandey
James L. Drum

INVENTOR

Matt H Kimball

UNITED STATES PATENT OFFICE.

MATTHEW H. KIMBALL, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO
HIMSELF AND JAMES GARVEY, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **110,858**, dated January 10, 1871.

I, MATTHEW H. KIMBALL, of the city and county of San Francisco, State of California, have invented a new and Improved Roller-Skate, of which the following is a specification:

Nature and Objects of the Invention.

This invention relates to an improved device for applying the swaying motion of the body, as made naturally when turning a curve in the act of skating, to produce a turning or swinging around, in a plane parallel to the floor, of the axle and wheels thereto attached of the skate, for the purpose of causing the skate to follow a curved line of more or less radius, according to the amount of inclination given the body, or, more properly speaking, the foot of the skater, the object of the improvement being to produce a skate which shall be easily and cheaply constructed, be less liable to get out of order than other skates utilizing the same principle, and which shall be lighter, more elastic to the tread, and offer better facilities for easy and graceful motion in skating.

Description of Accompanying Drawing.

Figure 1 is a side view of my arrangement for a four-wheeled skate. Fig. 2 is an end view of same. Fig. 3 is a cross-section of my box or bearing for my wheel-axle. Fig. 4 is a side view of this same box or bearing. Fig. 5 is an end view, illustrating a second arrangement of parts to accommodate a single roller. Fig. 6 is a side view of same.

Such parts of the skate as are in no way improved by this invention, as the straps to fasten the skate to the foot, &c., are not shown.

General Description.

The sole or foot-plate A of my skate may be fashioned in any known way suitable, and may be of iron or wood, or other material. The skate may be secured to the foot by any means suitable.

My rollers, runners, or wheels B are of common construction, and may be of box-wood or other suitable material, about two inches being a suitable diameter.

The axles C, carrying the rollers, may be of steel, and the rollers will revolve upon them, the axles themselves not turning.

Between the hubs of the wheels, where the wheels are set in pairs, a sleeve or socket, D, will be provided, serving to keep the wheels apart, and also this sleeve having increased surface over the axle is not so liable to cut and wear away the rubber spring or cushion E, in which it is embedded.

I make the sleeve D separate, and afterward drive the steel axle into it, or it may be cast on the steel axle, either way being cheaper than making this sleeve solid with and of a piece with the axle.

To prevent the axles from having too much side play, it will be seen in Fig. 3 that I provide little shoulders on the sleeve D, just inside the box F, after passing through the slots *f*.

Of course many ways may be devised to introduce the sleeve into the box F besides passing it through the slot *f*, which would be too small to admit it. In Fig. 4 I show the slot continued to the bottom of the box to the lower cap, *a*, so that the sleeve can be introduced from below before the cap is secured, and afterward little metal pieces can be soldered in, or may form a continuation of the lower cap. Another way I show in dotted lines, same figure, consisting of continuing the slot upward till it widens out to be large enough to pass the sleeve through.

F is simply a hollow metal box, having the slotted holes *f* through opposite sides, which set at an angle from the perpendicular, as shown in Figs. 1, 4, and 6. Through these slots the sleeve carrying the axle passes. In this box, above and below the axle, will be the rubber cushions or springs E, which lend elasticity to the tread of the skater and produce action, as hereinafter described. The box F is secured to the sole A by wood-screws passing through the lugs *e*.

The springs or cushions E may be adjusted to have more or less force by screwing up the set-screw G, Fig. 3, which bears upon the plate H, access being had to the set-screw through a hole bored through the sole A. A second method is illustrated in Figs. 5 and 6, where

the lower cap, *a*, being secured with screws, when it is screwed up the spring is compressed, or vice versa.

My skate may have any desirable number of rollers suitable, either each roller single or in pairs. Where a single roller is used an arrangement of the bearings will be made as in Fig. 5—that is, a bearing on each side of the roller will be provided, which need not be quite so broad as where but one bearing is used between two wheels.

The Operation.

The operation is as follows: When the foot of the skater is inclined sidewise, as in the act of turning a curve, the end of the axle on the side he leans is forced up the inclined slot and down the slot on the opposite side. Now, the slot not being vertical, this causes a swinging motion to be given the axle, as before stated, in a plane parallel to the skating-floor, which causes the skate to follow in a curved direction. The axles resting in rubber, a peculiarly easy and springy or elastic tread is obtained.

I know of the "Plimpton" skate, patented in 1863, reissued in 1870, but recognize no

similarity between my skate and his, further than that we both make application of the well-known principle as exemplified in the carriage of ordinary use, viz.—that of swinging the axle to make the wheels follow in a curved line—and my skate I recognize only as a diminutive "carriage" for the foot, utilizing this principle.

I and Plimpton use the motion of the foot to turn the axles; but, of course, there is no invention in such application aside from the device adopted to transmit the motion.

I do not claim my skate as simply an improvement on Plimpton's, but entirely independent of his, and as not in any way infringing.

Claim.

I claim—

The boxes or bearings *F*, having the slots *f* through their sides, with the springs or cushions *E*, as and for the purpose described.

MATTHEW H. KIMBALL.

Witnesses:

GEORGE PARDY,
J. D. BROWNE.

Nerr & Hovey,
Skate.
No. 113062. Patented Mar. 28. 1871.

Fig. 1.

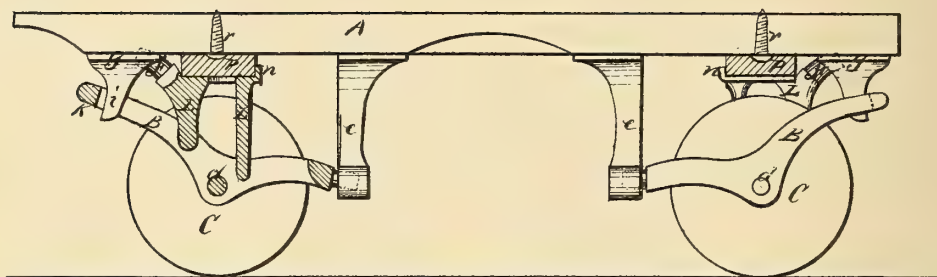


Fig. 2.

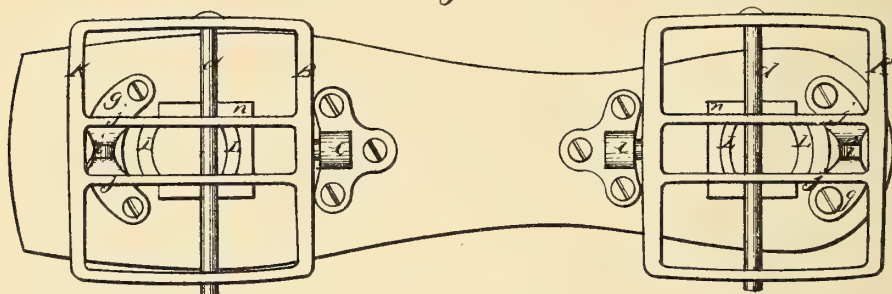
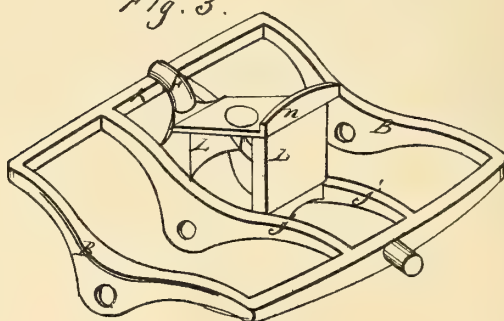


Fig. 3.



Witnesses.
Geo. V. Strong
Wm. H. Runnel

Inventors
David Kerr
Asa E. Hovey
by Dewey & Co.
their Attorneys

United States Patent Office.

DAVID KERR AND ASA EBENEZER HOVEY, OF SAN FRANCISCO,
CALIFORNIA.

Letters Patent No. 113,062, dated March 28, 1871.

IMPROVEMENT IN SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that we, DAVID KERR and ASA EBENEZER HOVEY, of the city and county of San Francisco, State of California, have invented an Improvement in Roller-Skates; and we do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use our said invention or improvement without further invention or experiment.

Our invention relates to improvements in four-wheel roller-skates, such as are constructed to turn from side to side in curves or circles by tilting the skate-block with the foot or shifting the weight of the skater to either side of the skate; and

It consists—

First, in providing a plate to serve as a bearing for the journal which turns in the foot-block, which shall have a lug or projection cast with or upon it, and which shall serve to prevent the displacement of the truck in which the wheels revolve and relieve the strain upon the bearings.

It also consists in an improved method of seating the rubber block or spring upon the foot-block so that it can be more or less compressed, as desired; and also in the standard which bears upon the block, and by means of which the trucks are held in position.

In order to more fully explain our invention, reference is had to the accompanying drawing forming a part of this specification, in which—

A represents the foot-block of any roller-skate.

The wheels C revolve upon the axle *d*, inside of a truck or frame, B, which is secured to the bottom of the skate-block by having one end supported at the lower extremity of a standard, *e*, while the opposite end is supported by a journal, *f*, which turns in a bearing directly under the skate-block, thus causing the frame to stand at an angle to the block when the block is turned or canted upon the wheels to the position suitable for carrying the skate around in a curve.

In order to provide a bearing for the journal *f*, we use a metal plate or box, *g*, which has a recess at its middle in which the journal bears.

This plate is secured to the under side of the skate-block by means of screws or other suitable device, and has cast upon it a lug or projection, *i*, which, when the frame is secured on the block, will pass down between the two central bars *j* of the frame, and a little inside of the cross-bar *k*, so that the frame can move up and down outside of it.

When the skate is in use the pressure upon the

wheels necessary to carry the skater forward or backward will be received by the standard *e* and lug *i*, the cross-bar *k* striking against the lug when an unusual pressure is brought to bear, thus providing a support at both ends of the frame.

At the center of the frame B we cast upon it a hollow standard, L, which extends up toward the bottom of the skate-block.

On the upper face or rim of this standard we form a flange, *n*.

The India-rubber spring or cushion P rests upon a screw, *r*, which screws into the skate-block.

The upper face of the standard L bears against the opposite side of the rubber cushion and keeps it in place, while the tension of the spring keeps the roller-frame horizontal.

When the skate-block is turned the pressure of the standard upon the cushion allows it to rock slightly upon the screw, giving an easy turn.

By removing the frame B from its bearings the screw *r* can be set out or in, as desired, in order to give more or less or an easier elasticity to the rubber block, thus permitting it to be compressed to suit the wearer.

By this means we greatly improve the ordinary roller-skate. The lug *i* gives an additional support to the frame and prevents breakage; the hollow standard with its flanged face holds the India-rubber spring in place and prevents it from working or crawling out of position, while the ready manner of regulating the tension of the cushion gives an improved and more durable skate than those ordinarily used.

Having thus described our invention,

What we claim, and desire to secure by Letters Patent, is—

1. The plate or box *g*, provided with the lug *i*, in combination with the journal *f* and cross-bar *k*, substantially as and for the purpose set forth.

2. The hollow standard L, cast upon the frame B, and provided with the flange *n*, in combination with the cushion P and foot-block A, substantially as and for the purpose described.

3. The adjustable screw *r*, in combination with the cushion P, block A, standard L, and frame B, substantially as and for the purpose set forth.

In witness whereof we have hereunto set our hands and seals.

DAVID KERR.

[L. s.]

ASA EBENEZER HOVEY.

[L. s.]

Witnesses:

F. O. WEGENER,

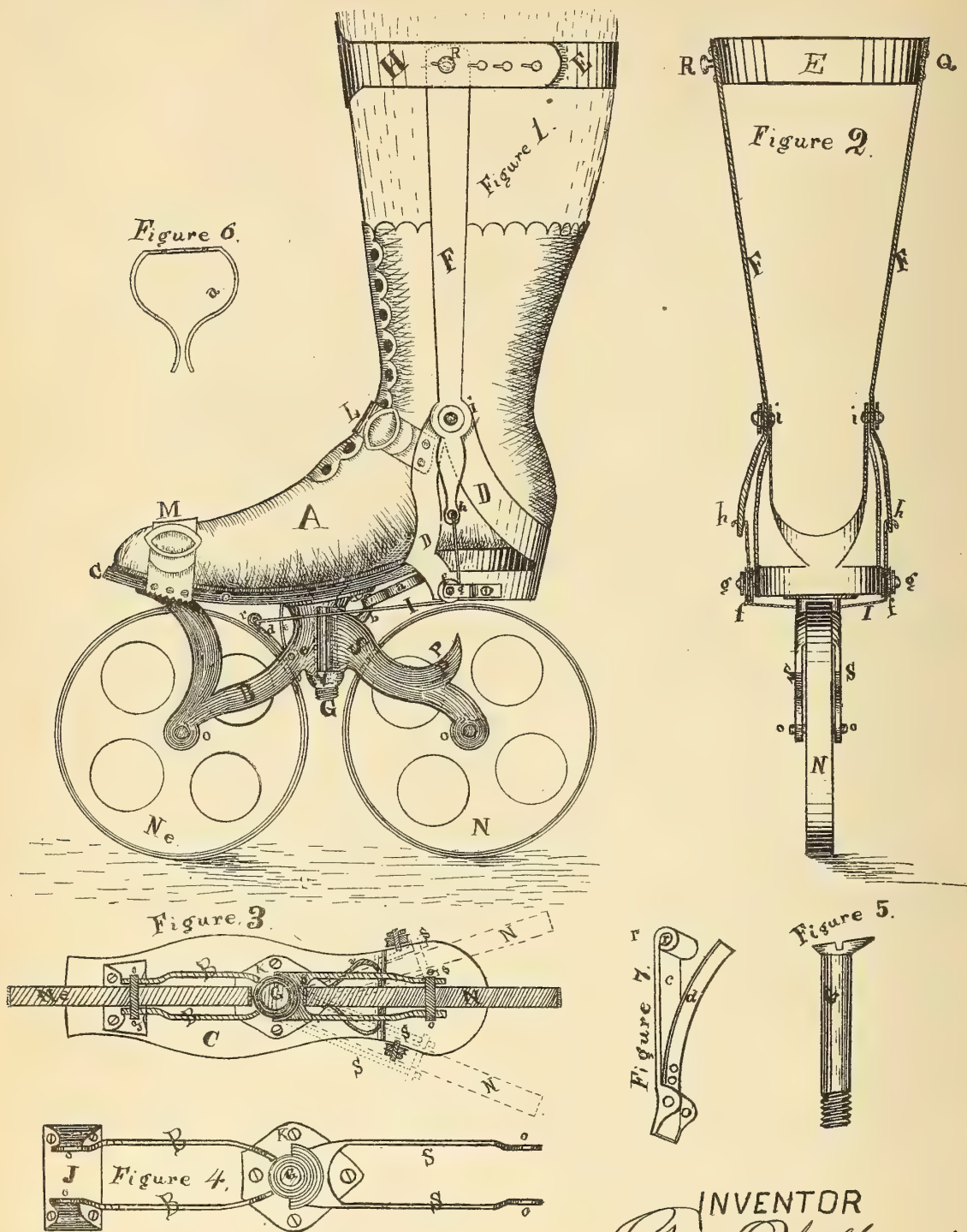
HENRY BERGGNER.

G. W. HAWK.

Improvement in Wheel-Skates.

No. 114,135.

Patented April 25, 1871.



WITNESSES.

INVENTOR
George W. Hawk
Doyle W. Campbell
Calvin S. Udell

UNITED STATES PATENT OFFICE.

GEORGE W. HAWK, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN WHEEL-SKATES.

Specification forming part of Letters Patent No. **114,135**, dated April 25, 1871; antedated April 18, 1871.

To all whom it may concern:

Be it known that I, GEORGE W. HAWK, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful improvement in the art of skating by the use of two wheels as runners, which I have named the "Mentupede;" and I do hereby declare and make known that the following is a full, clear, and exact description of the same, reference being made in so doing to the accompanying drawing, and letters and figures marked thereon, which form part of this specification.

My said invention consists in a novel mechanical device to be attached to the foot of a person in such a manner as to be perfectly secure and at the same time take the place of a skate, as a healthy exercise, being perfectly safe and very easy to manage. By the use of two wheels of suitable sizes the friction amounts to but little, so that the device may be used on the streets and walks, and run over uneven surfaces at pleasure, substantially as hereinafter described.

To enable those skilled in the art to understand how to make and use my invention, I will proceed to describe the same with particularity, reference being made in so doing to the aforesaid drawing, in which—

Figure 1 represents a side elevation of my invention; Fig. 2, a vertical rear view or heel thereof taken at the line *x* in Fig. 1. Fig. 3 is a bottom view of the foot-stand C, showing the method of securing the support B to the same. Fig. 4 represents a bottom view of the vibrating support S; Fig. 5, a view of the pivot-bolt G. Fig. 6 is the shape of the spring *a*, and Fig. 7 a perspective view of the friction-lever *c* and spring *d*.

Similar letters of reference in the different figures indicate the same parts in my invention.

A represents a foot secured to the foot-stand C, Fig. 1, by means of suitable straps and buckles M L H, or other suitable devices may be used for the same purpose, if desired. Said straps M L may be secured to the foot-stand C, Fig. 1, by rivets, screws, or slots. B represents the stationary or main support for the wheel Ne, vibrating support and wheel S and N. Said support B is secured to the bottom of the foot-stand C by rivets or screws, as

shown in Figs. 3 and 4, or otherwise, as desired.

It will be observed that the support B is provided with a socket, into which the vibrating pivoted support S is made to fit in such a manner as to form a hinge or joint, and both parts B and S, Figs. 1 and 4, are connected and held together by the pivot-bolt G passing through the top of the foot-stand C and into the support B, then through the vibrator S, and held into place by a screw-thread or any other suitable device at *v*, as shown by the dotted lines in Fig. 1. The vibrating support S is provided with a lug or projection, *b*, against which the spring *a*, Figs. 1, 3, and 6, acts in such a manner as to keep the vibrator and wheel N in a straight line with the wheel Ne when the machine is raised and in a hanging position.

It will be observed that the course of the machine while running may be changed, at the will of the operator, by twisting the foot-stand C so as to throw the heel of the same to the right or left of the center, thus moving the steering-wheel out of line, causing the machine to curve, as more clearly shown in Fig. 3 by the dark dotted lines N N N and S S S. Ne is the stationary position of the front wheel, indicated by the dark dotted lines.

The wheels Ne and N may be made as shown in Fig. 1, or in any other style desired, of any suitable material, and provided with suitable bands or tires of brass, iron, steel, wood, or vulcanized india-rubber, as desired.

The aforesaid wheels Ne and N are provided with lugs or journals at their centers, and the said journals revolve in suitable boxes or bearings, as shown in Figs. 1, 2, and 4, at *o o* thereof; or instead of said journals the wheels may revolve on a stationary bolt or axle, or any other suitable device.

The projection P on the aforesaid vibrating support S may be extended up above the top of the wheel N, and be provided with friction-rollers acting against the bottom of the aforesaid foot-stand C, for the purpose of preventing said wheel coming in contact with the same. The spring *a* is fastened and secured to the aforesaid foot-stand by means of rivets, screws, or otherwise, as desired; or instead of the aforesaid device a suitable spring may

be arranged on and secured to the vibrating support S, and the same act against the foot-stand C or the support B, for the purpose shown in Figs. 1 and 3. E represents a curved metallic strip shaped to fit the calf of the leg, and provided with a suitable strap, H, secured to one end of the said strip E by rivets or otherwise, as desired.

Said strap H may be provided with suitable button-holes or hooks, as shown in Fig. 1, for the purpose of clasping and securing the two parts around the leg. R is a button or knob for holding one end of said strap.

Suitable buckles or clasps may be used instead of the above device, if desired.

The said strip E has attached to its ends the upper end of the brake-levers F F F, by means of rivets, as shown in Figs. 1 and 2. The said brake-levers are pivoted to the heel-support D at *i i*, thereby forming a fulcrum thereof for the loop or fastening on the lower end of the levers F F at *h h*, Figs. 1 and 2, to which are fastened the ends of the cord or chain I, as shown. Said cord or chain passes over grooved pulleys *f f*, pivoted at *g g*, Figs. 1 and 2, as shown, then through a loop, P, in the friction-lever *c*. Said friction-lever is pivoted at *e*, as shown by the dark dotted lines in Fig. 1. It will be observed that, by moving said brake-levers at the top forward or backward, as the case may be, *h h* draws on the said cord or chain I, thus forcing the lower end or rubber part of said friction-lever against the said wheel Ne, thereby retarding its motion.

Said lever *c* is provided with a suitable spring, *d*, as shown in Figs. 1 and 7, which acts against the foot-stand C in such a manner as to keep the rubber part of said lever away from the wheel when the cord or chain is slacked.

Having described the construction and operation of my mentupede, I will now specify what I claim and desire to secure by Letters Patent—

1. The combination and arrangement of the foot-stand C, straps or clasps M L, main support B, vibrating pivoted support S, wheels Ne N, having suitable tires or bands, also suitable bearings *o o o o*, joint and pivot-bolt G, friction-lever *c*, and its spring *d*, operating substantially as and for the purposes herein shown and specified.

2. The metallic strip E, suitable strap H, knob R, brake-levers F F, heel-support D, and fulcrums *i i*, cord or chain I, loop or clasp *h*, pulleys *f f*, operating substantially as and for the purposes herein described and set forth.

3. The combination of the foot-stand C, stationary support B, as arranged for the front wheel Ne, pivoted vibrating support S, as arranged for the rear wheel N, double-acting spring *a*, and lug *b*, for the purposes herein shown and specified.

4. The joint and bolt G, arranged between the front wheel Ne and rear wheel N.

G. W. HAWK.

Witnesses:

C. G. UDELL,

B. H. CAMPBELL.

P. R. BOREIN.
Improvement in Roller-Skates.

No. 114,398.

Patented May 2, 1871.

Fig. 1.

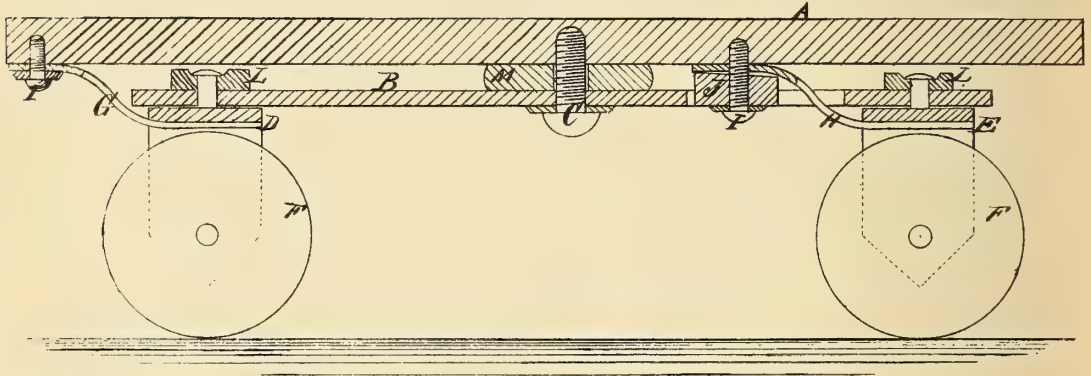
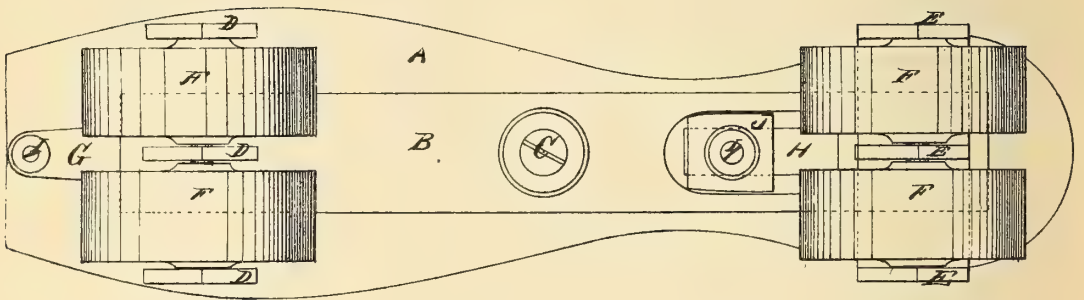


Fig. 2.



Witnesses.
Geo. N. Strong
Wm. Rummel

Inventor,
Peter R. Borein
By his Atty's
Dewey & Co.

United States Patent Office.

PETER R. BOREIN, OF SAN LEANDRO, CALIFORNIA.

Letters Patent No. 114,398, dated May 2, 1871.

IMPROVEMENT IN ROLLER-SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, PETER R. BOREIN, of San Leandro, county of Alameda, State of California, have invented an Improved Roller-Skate; and I do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

The object of my invention is to provide an improved roller-skate; and

It consists principally in a novel device for cramping or turning the rollers without canting the foot-stand or skate-block.

It further consists in the application of elastic blocks or springs, by which the skate is made to ride easily, and also in the particular application of the rubber or other elastic spring for returning the rollers to their parallelism after the weight is removed.

Referring to the accompanying drawing for a more complete explanation of my invention—

A is a foot-stand or skate-block, which may be constructed in any of the ordinary forms.

B is a sort of secondary block or rib, which extends longitudinally beneath the block A, and is pivoted to it at or near the center, as shown at C.

Two trucks or frames, D and E, are suitably constructed, and are so attached to the rib B as to turn from side to side, as desired.

These trucks carry the four bearing-wheels, F, as shown.

To the front of each truck is secured an arm, G H, which extend forward and are pivoted to the skate-block A by stout bolts or rivets I, about which they move when the skate-block is turned from side to side about its point of connection C with the rib B.

The rear arm H may be so formed as to pass each side of the rib B, or it may pass through an opening in the rib, as shown.

In either case a block of rubber, J, is secured, so that the movement of the rib B to one side or the other about its point of attachment to the skate-block will compress the rubber, and when the pressure is

removed the rubber will instantly bring the rib back to its place.

The operation will be as follows:

The rib and skate-block lying in line, the arms G and H, which attach the trucks to the block, will also lie in a line, and the wheels or rollers will stand so that the skate will move in a straight line. If it be desired to move to one side or the other, the foot is slightly twisted with the toe in that direction, and this causes the skate-block to turn to one side, moving over the rib B about the center-pin C. This movement throws the arms G and H one to each side of a longitudinal axis, and thus turns the trucks and their wheels so that the skate will move in a curve. The rubber block J will, by its pressure, return the parts to their first position the instant the pressure of the foot is removed.

A small friction-roller may be placed at each end of the rib so as to relieve the friction as the block A moves from side to side, or blocks of rubber L may be employed, as shown.

A rubber block, M, may be employed at the point C for the same purpose, thus giving a very elastic and easily-moving skate with a very natural motion.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The combination of the roller-frame, consisting of the lugs I hinged to the bridge-piece K, with the stock-plates, the roller-frame being slotted in front to permit an oscillating movement upon the stud F, as described.

2. The elastic block or spring J, in combination with and working in a slot in the rib C, skate-block A, and truck E, substantially as herein shown and described.

In witness that the above-described invention is claimed by me I have hereunto set my hand and seal.

PETER R. BOREIN. [L. S.]

Witnesses:

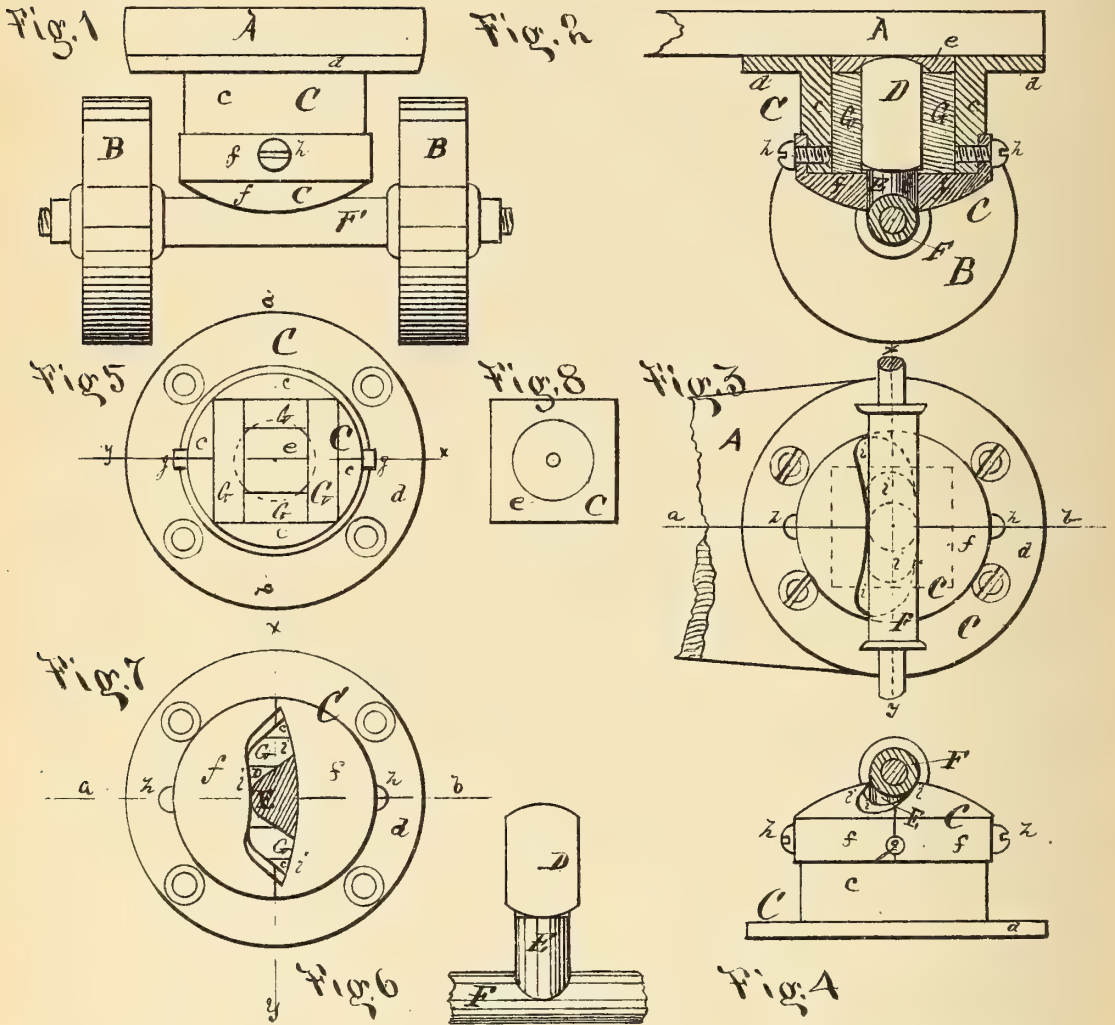
ROBERT LEE,
LEO WATKINS.

O. B. OAKLEY.

Improvement in Parlor Skates.

No. 115,767.

Patented June 6, 1871.



Witnesses
G. J. Hibault
Edw. A. Chatten

Inventor
Oliver Benjamin ^{his} *Oakley*
 Mark

UNITED STATES PATENT OFFICE.

OLIVER BENJAMIN OAKLEY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR
OF ONE-HALF HIS RIGHT TO PETER THOMAS GANNON, OF SAME PLACE.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. 115,767, dated June 6, 1871.

To all whom it may concern:

Be it known that I, OLIVER BENJAMIN OAKLEY, of San Francisco, in the county of San Francisco and in the State of California, have invented an Improved Parlor-Skate, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to that class of roller or parlor skates in which the axes of the wheels are forced into the position of radiuses to the circle in which the skate moves by the tilting of the sole-plate toward the center of said circle. Many of the skates of this class heretofore used are quite complicated in their construction, owing to a supposed necessity for several joints or hinges to provide for the required motion. One object of my invention is to provide a single joint that will give all the flexibility required, and therewith produce a skate that will be more durable and less liable to fracture or derangement than skates of more complicated construction. A second object of my invention is to combine with such a joint, when provided, a powerful spring, so arranged as to bring the axes instantly back to their original position parallel with each other as soon as released from the pressure caused by tilting the sole-plate. A third object of my invention is to provide an improved device that may be employed with a single joint for converting the tilting or oscillating motion of the sole-plate into the required motion of the axes of the wheels or rollers. The first two objects above set forth I accomplish by the employment of a peculiar modification of the well-known ball-and-socket joint, both the ball and socket of which I form with flat vertical faces, or their equivalent, with a space between said faces, into which I insert India-rubber springs. The upper and lower portions only of the ball are necessarily spherical or convex. The upper part of the ball, upon which the entire weight of the skater is thrown, fits into a corresponding concave surface in the upper part of the socket of sufficient extent to allow the necessary amount of motion in any required direction. The lower part of the socket is closed by a cap, through an opening in which passes a vertical shaft proceeding from the ball and rigidly attached to or cast or wrought in one piece with the axle of the wheels. The

third object of my invention is accomplished by giving a suitable form to the aforesaid opening through the cap, and to the part of the vertical shaft that passes through said opening, or to the adjacent parts of the axle of the wheels or rollers that may come in contact with the faces or edges of said opening.

In the drawing, Figure 1 is an end elevation of a skate having my improvements. Fig. 2 is a vertical longitudinal section of one end of the same. Fig. 3 is a view of under side of same with the wheels removed and the ends of the axle broken off. Fig. 4 is an elevation of the ball-and-socket joint, showing the axle in section. This figure is in an inverted position. Fig. 5 is a view of under side of socket and springs with the cap removed. Fig. 6 represents the central part of the axle, united to the ball by the vertical shaft, said axle, vertical shaft, and ball being formed in one piece. Fig. 7 is a view of the under side of ball and socket and springs, showing a suitable form for the opening through the cap, and a corresponding form of section for the vertical shaft, to be employed when the said vertical shaft is so long that the axle does not come in contact with the cap. Fig. 8 is a view of under side of plate in which the convex upper end of the ball works.

Each part is indicated by the same letter whenever it appears in the drawing.

A is the sole-plate. B are the wheels. C is the socket. D is the ball; E, the vertical shaft; F, the axle; G, the springs. The socket C consists of the side casing *c*, flanges *d*, plate *e*, and cap *f*. The inner surfaces of the side casing *c* inclose a rectangular space, having nearly the form of a cube. This space is made rectangular in section, as that form is preferable to others for preventing the turning of the springs, but any form may be adopted that varies sufficiently from the cylindrical to prevent the springs from slipping around in the socket; but the square or rectangular form is preferable for the vertical sides of both the ball and socket, because with that form the springs may be cut out with great economy and facility from flat sheets of India rubber. The flanges *d* are for securing the ball and socket to the sole-plate. The plate *e* has a concavity on its under side, into which the top of the ball fits; its

upper surface rests against the sole-plate, and its sides or edges fit the sides of the space in the casing *c*. The cap *f* is formed in two pieces, and is secured to the casing *c* by means of the studs *g* and screws *h*. Between the vertical sides of the ball *D* and inner faces of the socket *c* are placed the rubber springs *G*, and the ball *D* is rigidly connected to the axle *F* by the vertical shaft *E* in such relative position that when the sole-plate is in a horizontal position and the springs uncompressed the line *x y* of the axle is at right angles to the line *a b* of the sole-plate and the position of the shaft *E* vertical.

Now, by reference to Fig. 7, it will be evident that if the vertical shaft *E* have the form of section shown in that figure, and the curved opening *i* through the cap *f* have the form therein shown, the tilting of the sole-plate will carry the shaft *E* toward one or other end of the opening *i*, and, compressing the springs, cause a partial revolution of the shaft *E* on its axis, and thereby change the angle of intersection of the lines *a b* and *x y*, which is the accomplishment of the third object of my invention; but, in practice, in order to reduce the height of the sole-plate, I make a bearing point on the surface of the axle act with a

bearing point on the vertical shaft on the edges or faces of the opening *i'*, as shown in the other figures, instead of having a broad curved face on the shaft, as shown in Fig. 7, and in this case the modification in the edges or faces of the opening *i*, shown in Figs. 3 and 4, becomes necessary.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the ball *D* and plate *e* with springs *G*, inclosed in a suitable socket, substantially as and for the purposes set forth.

2. The ball *D*, plate *e*, springs *G*, in combination with the casing *c* having flanges *d*, substantially as and for the purposes set forth.

3. The ball *D* and shaft *E*, when provided with springs *G*, in combination with the socket *C* having a suitable opening through the cap *f* for the passage of the shaft *E*.

In testimony whereof I have hereunto set my hand this 21st day of February, A. D. 1871.

OLIVER BENJAMIN ^{his} + OAKLEY.
mark.

Witnesses:

E. J. THIBAUT,
EDWD. CHATTIN.

A. T. COVELL.

Improvement in Roller-Skates.

No. 116,161.

Patented June 20, 1871.

Fig. 1.

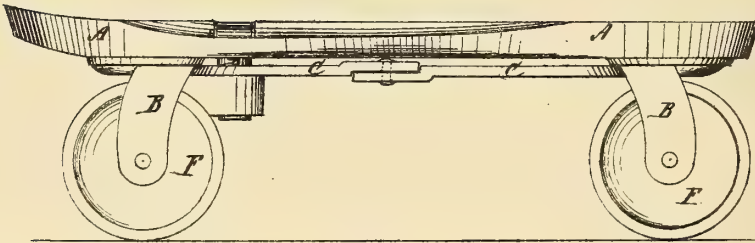


Fig. 2.

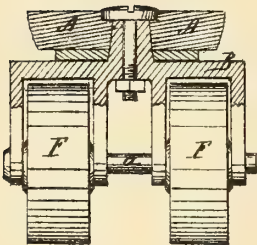
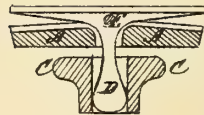


Fig. 3.



Witnesses:

H. C. Treitz
Thos. D. D. O'Connell

Inventor:

Allen T. Covell.

PER *[Signature]*
Attorneys.

UNITED STATES PATENT OFFICE.

ALLEN THOMPSON COVELL, OF SAN LEANDRO, CALIFORNIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 116,161, dated June 20, 1871.

To all whom it may concern:

Be it known that I, ALLEN THOMPSON COVELL, of San Leandro, county of Alameda, State of California, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

My invention is an improvement in devices for operating roller-skates, whereby the front and rear sets of rollers are simultaneously adjusted for describing circles of greater or lesser radius. The invention is more particularly an improvement on the skate patented to Hiram Robbins May 10, 1870. In his invention the arrangement of the curved or semicircular bar, bolt, and spring-plate is such that a downward pressure is continually exerted on the levers for operating the rollers, whereby the friction of the bearings of the roller-frame is increased, rendering it difficult for them to be turned. Several other disadvantages also result, which it is unnecessary to specify here. My device consists of fewer parts, is more cheaply constructed, furnishes a better bearing or rest for the foot, in no way increases the friction of the pivot-bearings, is more simple, and less liable to get out of order or to become broken.

Figure 1 represents a side view of the skate; Fig. 2, sectional view at center of wheels; Fig. 3, sectional view at center of lever.

A is the stock or foot-stand; B B, the trucks, connected by the reaches C C and secured to the stock A by bolt or socket-pin, as shown in Fig. 2; F F, rollers or wheels. D is the reversible lever. E is the pin or pivot upon which lever turns. The vertical part of D enters a recess or slot in the front reach and works freely therein. Dotted line in A represents center of stock, and curved line the edges of same. *a* is the axle or journal; *b b*, plate or washer under the stock. Thus, when the foot of the person wearing the skate is pressed down with more force on one end of the reversible lever than the other, the front reach or lever is turned toward the opposite side, carrying with it the inner end of the rear reach, and thereby placing the two sets of rollers at opposite angles to the skate-stock.

What I claim is—

The T-shaped lever D, pivoted in the stock A, with its vertical part working in the recess or slot of the front reach, as shown and described.

ALLEN THOMPSON COVELL.

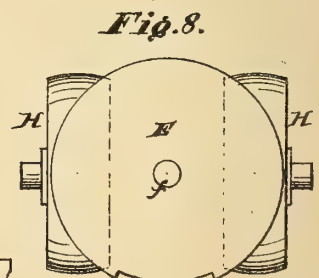
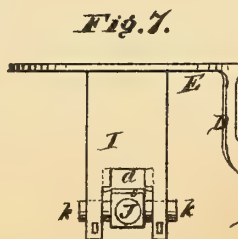
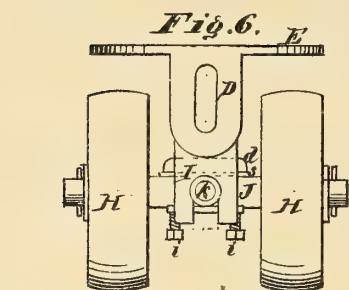
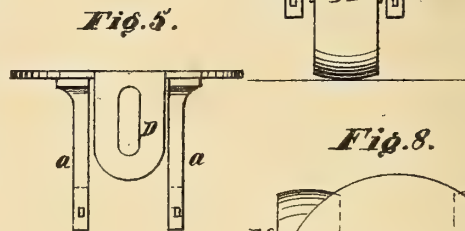
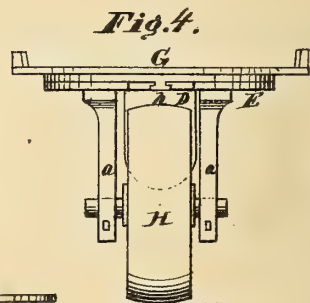
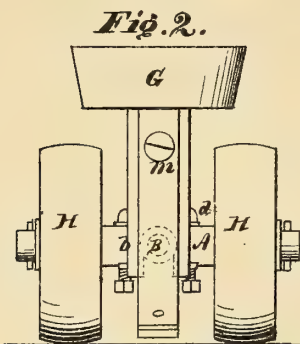
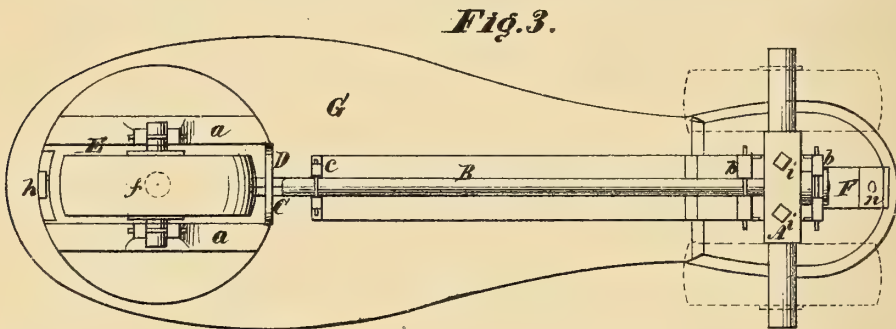
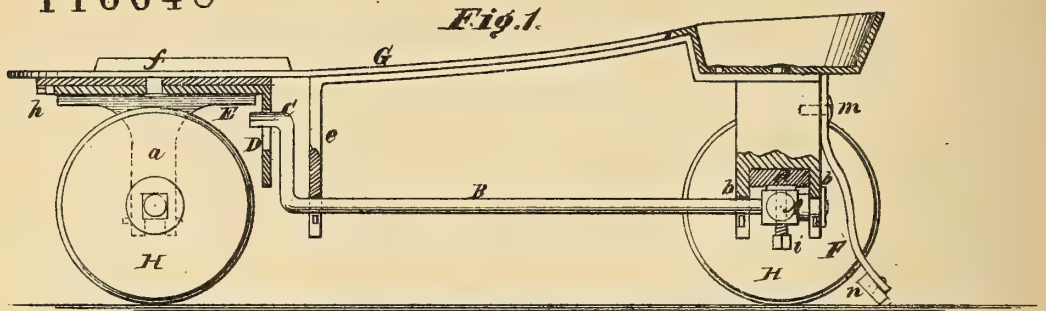
Witnesses:

G. E. SMITH,
STEPH. G. NYE.

George Vincent's Impd. Roller Skate.

PATENTED JUL 4 1871

116648



Witnesses.

Herbert C. Hall.
Giles B. Hunt.

Inventor.

George Vincent.

UNITED STATES PATENT OFFICE.

GEORGE VINCENT, OF STOCKTON, CALIFORNIA, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO WILLIAM H. VAN VLEAR AND CHARLES D. LADD, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 116,648, dated July 4, 1871.

To all whom it may concern:

Be it known that I, GEORGE VINCENT, of the city of Stockton, county of San Joaquin and State of California, have invented certain Improvements in Roller-Skates, of which the following is a specification:

The first part of my invention relates to the pivoted bearings for the front roller or rollers, operated by a crank or arm rigidly attached to the axle of the rear rollers, for the purpose of compelling a corresponding action of either the front or rear rollers by the motion of the others. The second part of my invention relates to a stop for preventing the skate from running ahead from under the foot as it is usually inclined to do with persons not expert in the use of roller-skates.

Figure 1 is a longitudinal vertical section of my invention. Fig. 2 is an end view looking from the right, as shown in Fig. 1. Fig. 3 is a bottom view of my invention with the rollers omitted. Fig. 4 is an end view looking from the left, as shown in Fig. 1. Fig. 5 is a view of the pivoted plate and hangers for the axle of the front roller or rollers, as shown from the right in Fig. 1. Fig. 6 is a view of the pivoted plate and hangers when arranged for two front rollers, looking from the right, as shown in Fig. 1. Fig. 7 is a side view of same. Fig. 8 is a top view of same with rollers.

G is the body of the skate, which I construct of metal or wood. H H H are the rollers, of which I prefer to and do use three, one in the front and two in the rear, but four can be used, if desired, by the use of the double hanger I, the axle J, and the trunnions *k k* for the front rollers, as shown in Figs. 6 and 7. E is a plate to which is attached the hangers *a a* for the front roller or rollers, and is pivoted on the body of the skate at *f*, but is prevented from turning further than is desired by the stop *h*. Upon this plate is a slotted or forked arm, D, to receive the crank C, by which the front roller or rollers are operated. The crank-rod B rests in the hangers *c* and *b b*, and is attached rigidly to the rear axle A, which bears upon a plate, S, which rests upon a rubber or metal spring, *d*. The set-screws *i i* are for the purpose of adjusting the axle A so as to change the running direction of the skate, as may be desired. The stop F is a plate or rod

with a pad or cushion of rubber, or other suitable material, at the bottom of it, and nearly as low as the bottom of the rear rollers.

The skate is secured to the foot in any of the usual modes, and the rear axle being properly adjusted by the set-screws *i i* acting upon the plate S and the spring *d*, and the foot kept level, the course of the skate is in line with the foot, but by rolling the foot and with it the body of the skate either to the right or left, the rear axle A, by means of the rod B, operates the crank C, which causes the plate E and hanger *a* to turn on the pivot *f*, thus throwing the front roller or rollers at an angle with the line of direction of the skate, thus causing the rollers to describe a curve, and the elasticity of the spring *d* causing the rollers to return to the line of the foot as soon as the pressure is removed. Should there be a tendency to roll the foot either to the right or left, the axle A can be adjusted by the set-screws *i i*, and the plate S acting upon the spring *d* so as to accommodate it, and at the same time maintain the proper line of direction.

The stop F is designed more especially for learners, and is to prevent their falling backward, owing to the skate running ahead of the body, so as to throw its whole weight upon the rear rollers. The pad or cushion *n* being but slightly above the floor when both the front and rear rollers are bearing, the raising of the front rollers, as will be done when the skate is too far ahead of the body, will bring the pad or cushion in contact with the floor, immediately checking the forward motion of the skate, and allowing the body to regain its balance. The stop can be readily removed by removing the screw *m*.

I do not claim the roller nor the springs; but

What I do claim as my invention, and wish to secure by Letters Patent, is—

1. The pivoted standards *a a* and plate E, in combination with the crank C, the rod B, and the axle A, substantially as and for the purposes hereinbefore set forth.

2. The plate or rod F, and the pad or cushion *n*, substantially as and for the purposes hereinbefore set forth.

GEORGE VINCENT.

Witnesses:

HERBERT E. HALL,
GALEN C. HYATT.

George S. Curtis.

Roller Skates.

PATENTED JUL 4 1871

116690

Fig. 1.

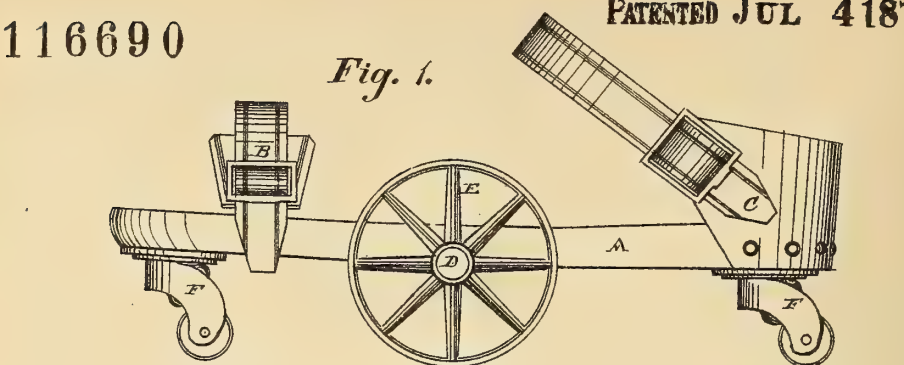


Fig. 2.

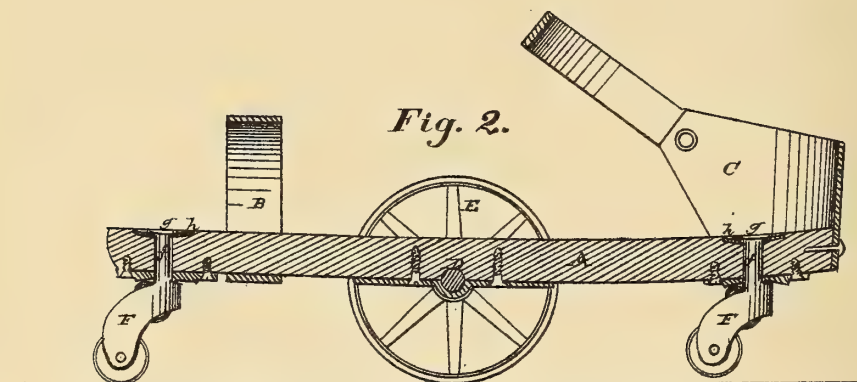
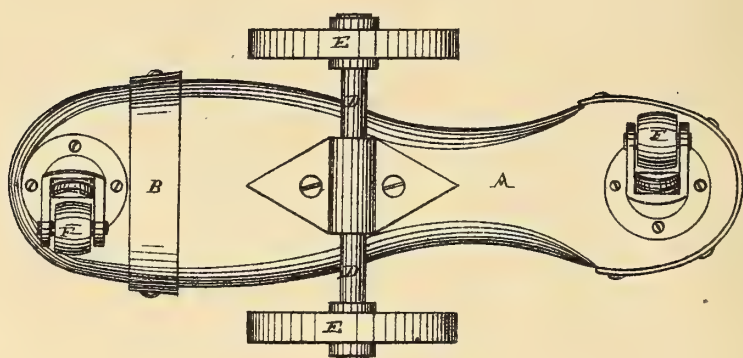


Fig. 3.



Witnesses:

Eugene C. Adams

J. West Wagner.

Inventor:

George S. Curtis.

by Johnson, Klauke & Co.
his attorneys.

UNITED STATES PATENT OFFICE.

GEORGE S. CURTIS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 116,690, dated July 4, 1871.

To all whom it may concern:

Be it known that I, GEORGE S. CURTIS, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification:

My invention relates to that class of skates known as parlor-skates—that is to say, skates provided with rollers instead of the usual iron; and it consists in providing such skates, when used with central driving-wheels, with two caster-wheels, one at the heel and one at the toe, or only one at the heel, which act independently of the center wheels and of each other, so as to have a free movement on any degree of the arc, independently of the others.

In the drawing, Figure 1 is a side elevation of my improved roller-skate. Fig. 2 is a central longitudinal section of the same, and Fig. 3 is a bottom view of the same.

A is the usual wooden or metal foot-piece of the skate, provided with a toe-strap, B, and heel-cap C. On the center of the inner side of this piece A is suitably secured a shaft, D, on which the center driving-wheels E revolve, one on each side of the skate. Through suitable openings in the toe and heel-part of this piece A, from the under side upwardly, extend the shanks or stems *f* of casters F, their upper ends being upset so as to form heads *g*, which have their bearing on a metal lining, *h*, of the opening. There is no especial kind of casters required for this purpose, as any casters having stems will answer the purpose, but I prefer using the anti-friction caster shown in the drawing.

In using this improvement short curves or turns can be made with perfect ease by the skater without great exertion and consequent cramping of the feet; for, while the casters do support the heel and toe, or either, in making curves, they also allow the turn of the same on a center formed by the point of contact of the drive-wheel on the side to which the turn is made with the floor, which would be impossible to do were wheels used in place of the casters, that could not turn on a swivel. This enables an expert skater to perform figures and feats on roller-skates with perfect ease and safety, which now are very difficult and dangerous to execute.

It will be understood that each of these casters, not being connected to the other or to the driving-wheels, has a free independent movement, so that when two casters are used they may extend both in the same or in opposite directions without in any way interfering with their full, free, and independent motion.

I do not confine myself to the number of casters used, as one under the heel will answer the purpose without one under the toe.

What I claim as new, and desire to secure by Letters Patent, is—

In a roller-skate having central driving-wheels, the combination therewith of one or more independent caster-wheels, operating substantially as described.

GEO. S. CURTIS.

Witnesses:

HENRY CURTIS,
W. W. WATSON, Jr.



C. Raitz .

Parlor Skate.

117329

PATENTED JUL 25 1871

Fig. 1.

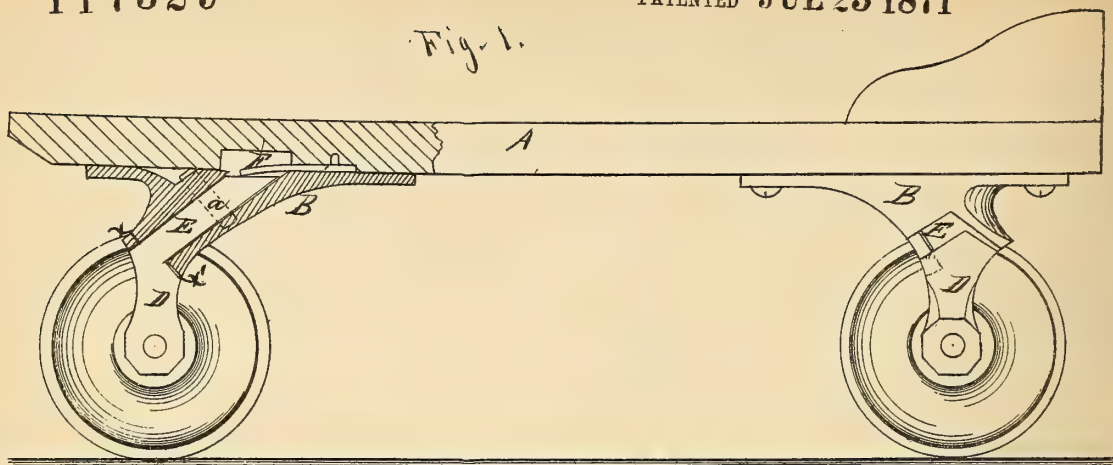


Fig. 2.

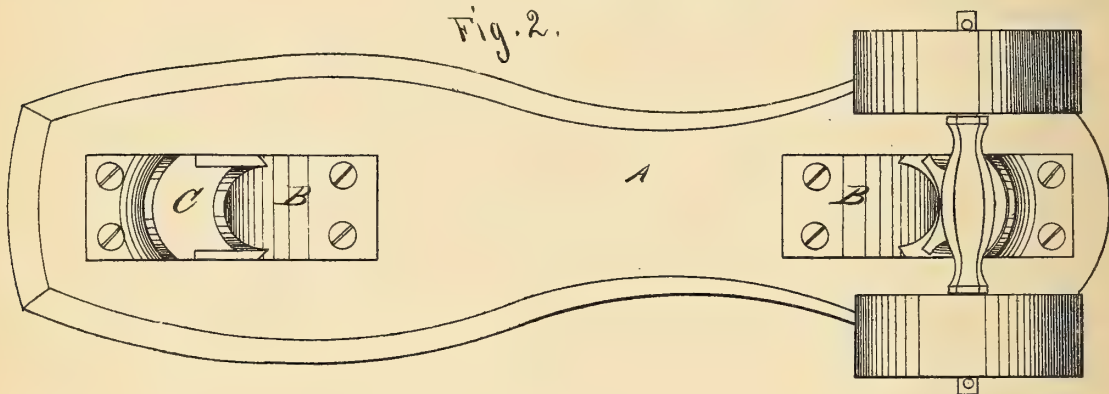
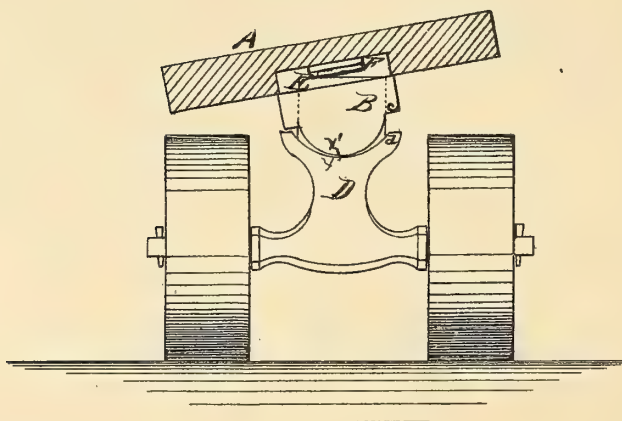


Fig. 3.



Witnesses.

Brook Johnson
J. M. Beath

Inventor.

C. Raitz.
By his atty C. M. Smith

UNITED STATES PATENT OFFICE.

CHRIS RAITZ, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. 117,329, dated July 25, 1871.

To all whom it may concern:

Be it known that I, CHRIS RAITZ, of San Francisco, in the county of San Francisco and State of California, have invented an Improvement in Parlor-Skates; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to that class known as parlor or roller-skates, and has for its object an improved device for turning or cramping the rollers. This is effected by means of a plate which is secured to the foot-stand, and is provided with an angular slot, into which the standard which supports and turns the axles is secured so as to turn about its axis. This movement brings the wheels on one side nearer together and thus allows the skate to move in a curve. The lower end of the slotted plate is formed into a curve with a projecting shoulder, and the upper part of the standard has a similar shoulder, the two being so arranged as to limit the motion in either direction. A steel or other spring is set in the block and presses against the upper end of the angular arm of the standard, and returns the wheels to place when the pressure is removed.

Referring to the accompanying drawing for a more complete explanation of my invention, A is the foot-stand or skate-block, and B B are metal plates firmly secured to the foot-stand on its lower side and sufficiently near the ends to bring the roller into the proper position when they are attached. The plates B are made to project downward a sufficient distance to admit of the formation of an angular slot, C, which extends up through the top. The standard D may be formed with the axle, or in other suitable manner, and extends up vertically to the lower part of the plate B, from which point it is continued as a flattened plate or bar, E, which is fitted into the slot C in the

plate B. A pin, *a*, secures the standard by passing through the sides of the plate B and the bar E, as shown, so that the standard can move about its center or point of support. As this motion takes place at an angle, it will bring the rollers on either side nearer together by throwing the axles out of parallel and into converging lines. In order to prevent too great a motion from side to side, the lower end of the plate B, which is curved, has a shoulder, *c*, formed at each side, and a corresponding shoulder, *d*, is formed at the top of the standard just at the base of the inclined bar E, and when the turn is sufficient the two will come into contact and prevent a further motion. In order to return the standard to its vertical position after the pressure has been removed, a steel or other spring, F, is secured inside the plate B so as to press upon the upper end of the bar E. As this end is square, one corner or the other will be elevated by the turning from side to side, and the spring will press upon that corner and thus restore it to its position when the pressure is removed. It will be observed also, that, from the peculiar construction of the parts, bearing-surfaces are formed at *x x'*, so that the strain is necessarily taken from the rivet or securing-pin.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination of the plate B with its shoulder *c*, and standard D with shoulder *d*, and bar E with the spring F, the parts B E being provided with bearing-surfaces *x x'* for the purpose of relieving the rivet-pin *a*, as described.

In witness whereof I have hereunto set my hand and seal.

CHRIS RAITZ. [L. S.]

Witnesses:

C. W. M. SMITH,
E. V. SUTTER.

KERR & HOVEY'S RUDDER SKATE

PATENTED AUG 1 1871

117643

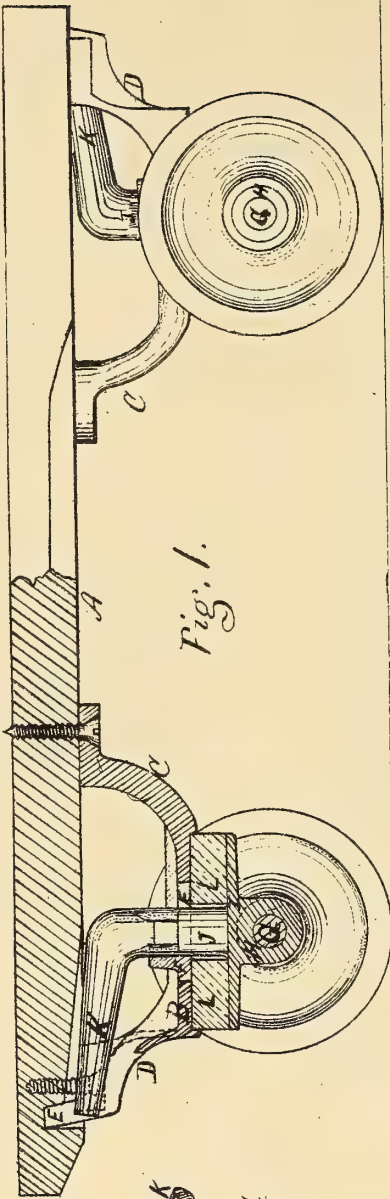
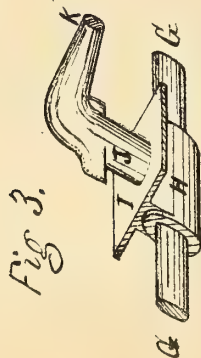


Fig. 1.

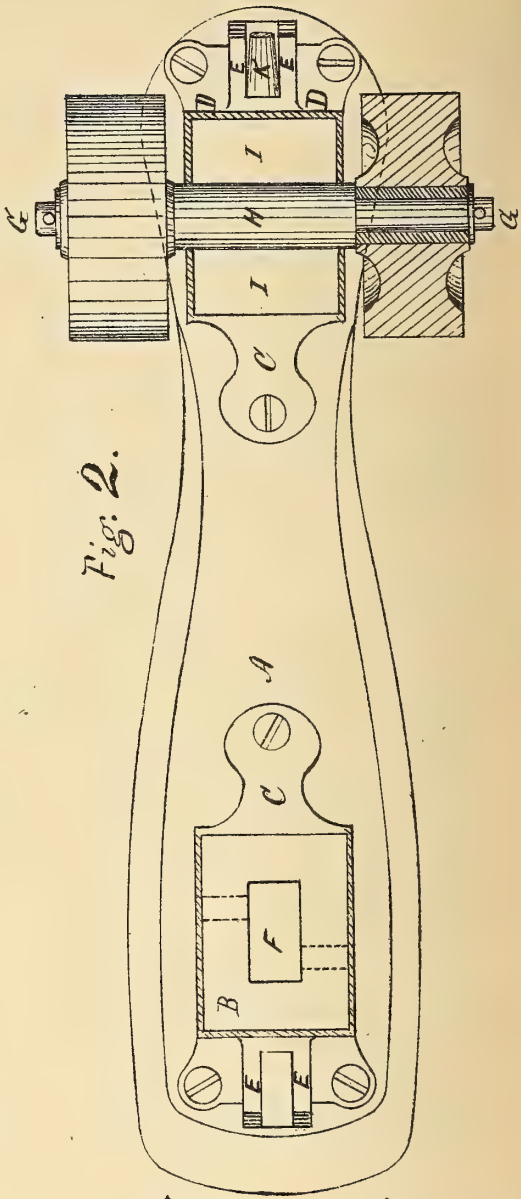


Fig. 2.

Inventors.
David Kerr,
& Hra E. Hovey

Witnesses.
Alfred Rex
J. F. Ponder

UNITED STATES PATENT OFFICE.

DAVID KERR AND ASA E. HOVEY, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. 117,643, dated August 1, 1871.

To all whom it may concern:

Be it known that we, DAVID KERR and ASA E. HOVEY, of the city and county of San Francisco and State of California, have invented certain Improvements in Roller-Skates, of which the following is a specification:

Figure 1 is a side view, partly sectioned, of a skate having our improvements. Fig. 2 is a bottom view of the same with one set of wheels, axle-tree, king-post, and tiller removed. Fig. 3 is a perspective view of the axle-tree, axle-plate, king-post, and tiller.

Like letters refer to the same parts in all the figures.

The foot-piece A is made and fastened to the foot in any of the ordinary ways. To the under side of this foot-piece is fastened the rectangular and flanged frame-plate B, by a single curved and rounded leg, C, with a screw through its foot at one end, and at the other end by the peculiarly-formed pair of legs D, with a screw through each foot. Between these legs is the fork E E, extending somewhat into the foot-piece. On the upper side of the frame-plate are two projections, one on each side of the hole F, whose base and position are indicated by the dotted lines in Fig. 2. From their base upward they taper. They are pyramids rounded at the corners. The axle-tree, composed of the steel axle G in the cylinder H, the axle-plate I having its face corresponding in size and form to that of the frame-plate B, the king-post J with a lug on each side, and the tiller K as shown in perspective in Fig. 3, form a single solid piece. The hole F is of a width equal to the diameter of the key-post J, and long enough to allow the post with its lugs to pass through it and be turned to its place. When in place, that part of the king-post immediately beneath the lugs plays in the hole F, the lugs rest on the upper surface of the frame-plate in contact with the projections on that surface, and the extremity of the tiller slides in the fork E E, unlimited vertically. The frame-plate and the axle-plate are kept pressed apart by the rubber pad crowded between them at the time the parts are put together.

The above-described improvements may be used in ice-skates by attaching runners to the axles instead of rollers. The wheels or rollers are of *lignum-vitæ*, box, or other very hard wood, and are bushed or boxed as follows: The wood for each wheel is blocked out somewhat thicker than the desired thickness of the wheels and clamped in a chuck or vises, or otherwise secured against splitting. A proper-sized hole is then bored through the center and a strong tube of brass or other suitable metal driven tightly through the hole. The tube can then be reamed out truly and placed on a mandrel, and the roller turned with the utmost accuracy. A roller thus made will last much longer and run much easier than those made in the ordinary way.

The operation is as follows: The king-post K, working vertically through the hole F, allows the entire pressure from the foot to rest on the rubber cushion L, thus affording all the well-known advantages of an elastic support. The foot-piece and frame rock from side to side on the rubber as a support. This causes the foot-piece to vibrate laterally to a considerable distance each side of the stationary king-post, and as the extremity of the lever is carried with and by the foot-piece, the king-post is turned on its own axis and with it the axle-tree and wheels, precisely like a tiller, except that the lever is moved by the foot-piece instead of by hand.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The arrangement of the frame, consisting of the perforated plate B having the legs, feet, and fork, as described, with the solid piece, shown by Fig. 3, as and for the purposes herein set forth.

San Francisco, March 8, 1871.

DAVID KERR.
ASA E. HOVEY.

Witnesses:

ALFRED RIX,
J. F. COWDERY.

John L. Boone

Skate.

No. 120,147.

Patented Oct. 24, 1871.

Fig. 1.

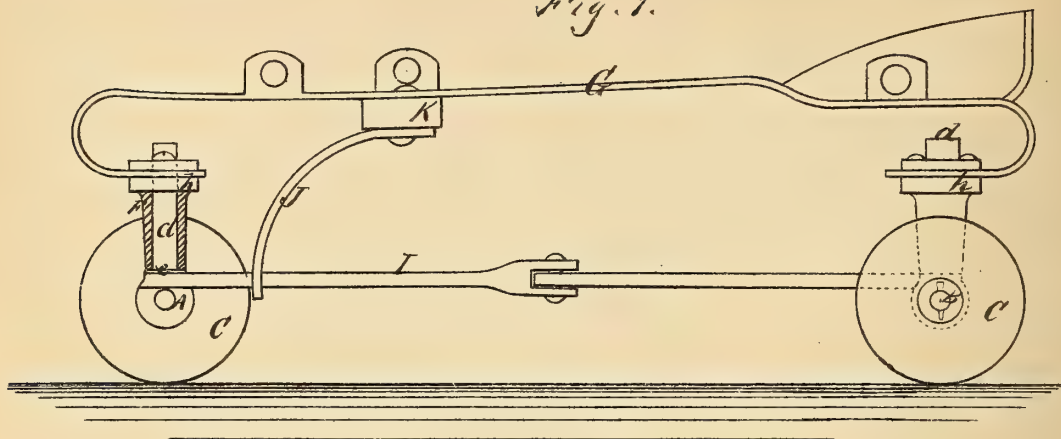


Fig. 2.

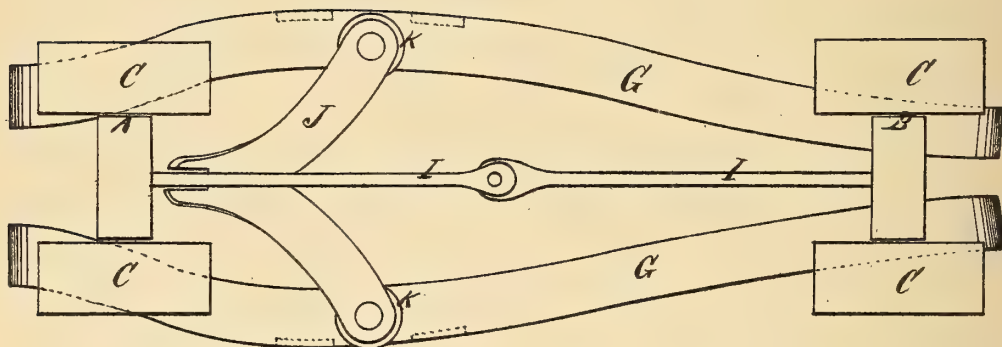
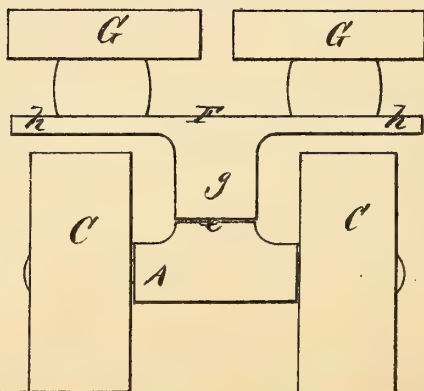


Fig. 3.



Witnesses
Geo. H. Strong
Wm. H. Runnels

Inventor
J. L. Boone

UNITED STATES PATENT OFFICE.

JOHN L. BOONE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO HIMSELF AND MILTON A. WHEATON, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 120,147, dated October 24, 1871; antedated October 3, 1871.

To all whom it may concern:

Be it known that I, JOHN L. BOONE, of the city and county of San Francisco, State of California, have invented an Improvement in Skates; and I do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

My invention relates more particularly to parlor or roller-skates; and it consists in the employment of longitudinal side springs as a support for the feet of the skater in place of the ordinary block or foot-stand. These springs are connected with the axle upon which the wheels revolve in such a manner as to cause the wheels to turn to the proper position to run the skate in a curved line to the right or left by the turning of the foot of the skater, so as to depress the spring upon the side which it is desired to run the skate. It also consists in an improved arrangement of the parts of the skates in order to transmit the proper motion from the springs to the axles to turn them to the proper position.

In order to explain my invention reference is had to the accompanying drawing forming a part of this specification, in which—

A represents the front and B the rear of a parlor or roller-skate, upon the ends of which the wheels or rollers C revolve. These axles are cast or otherwise formed with a spindle, *d*, projecting upward from their middles, a shoulder, *e*, being left near the base of the spindle, as shown. A metal bolster, F, is then cast with a hub, *g*, and arms *h*. The hub *g* has a hole through it of sufficient size to permit the spindle *d* to pass up through it until the lower end of the hub bears upon the shoulder *e*. The spindle then can be secured in place by a rivet passing through its upper end above the bolster, or by other equivalent means, which will permit the axle to turn independent of the bolster. The arms *h* extend to each side of the hub above the wheels. The front and rear bolsters are then united by two springs, G G, the ends of which are secured to the arms *h* above each wheel, so as to pass along each side of the foot, and serve as a support for the feet of the skater. These springs are here represented as having their ends curved into the form known as C-springs; but they can be

formed into various curves; or the simple straight spring can be used, as desired. The springs are also shown as conforming to the shape or curve of the side of the foot which is to rest upon them, which is preferable; but they can also be made straight, if desired. The ends of these springs are secured to the arms by means of rivets, or otherwise, so that the bolster can turn slightly, if required; or, if desired, rigid side pieces can be employed, which rest at each end upon a cushion or spring. The axles A B are united by a reach, I, which is jointed in the middle, so as to allow its center to be thrown from side to side to give direction to the rollers. A forked lever-bar, J, has one end split and the parts separated, as shown. The two arms thus formed are then secured to the under side of the spring G about their middle, an elastic or half-round washer, *k*, being inserted between them and the springs. This bar is then bent forward until it approaches the front axle A. The opposite or forward end of this bar is also slotted sufficiently to allow it to straddle the reach. Thus, when one of the springs is depressed by the weight of the skater, the slotted or lower end of the bar J will be thrown in an opposite direction, carrying the hinged reach to one side, and also turning the axle to the proper position to cause the wheels to run in a curve.

The springs G provide an easy and elastic support for the skater, and by throwing his weight to either side the spring upon that side will be depressed vertically, and the opposite one elevated, so as to cause the bar J to carry the axles A B and wheels C to a position suitable for running the skates in a curved line. The direct up-and-down movement of the side springs gives a much more easy and pleasant movement to the skates than when the axles are united by a block, especially when the floor upon which they move is rough or uneven. Besides, on account of the elasticity and flexibility of the support, the feet of the skater do not become tired and cramped. The skate can also be made much lighter than when the block is employed.

Various devices may be employed for connecting the axles with the springs in order to turn them to the curving position; but

What I claim, and desire to secure by Letters Patent, is—

1. The longitudinal side springs G, secured to

the arms *h* of the bolster I so as to connect the two axles A and B, substantially as and for the purpose above described.

2. The axles A and B with their spindles *d*, in combination with the hub *g* having the arms *h* and the springs G G, all arranged and operated substantially as and for the purpose described.

3. The forked lever J, constructed as described, in combination with the springs G G and the

hinged reach I, all arranged substantially as and for the purpose set forth.

In witness that the above-described invention is claimed by me I have hereunto set my hand and seal.

JOHN L. BOONE. [L. S.]

Witnesses:

WM. H. RUNNELS,
GEO. H. STRONG.

(143)

(143.)

JOHN H. FENTON.
Improvement in Roller Skates.

No. 122,376.

Patented Jan. 2, 1872.

Fig. 1.

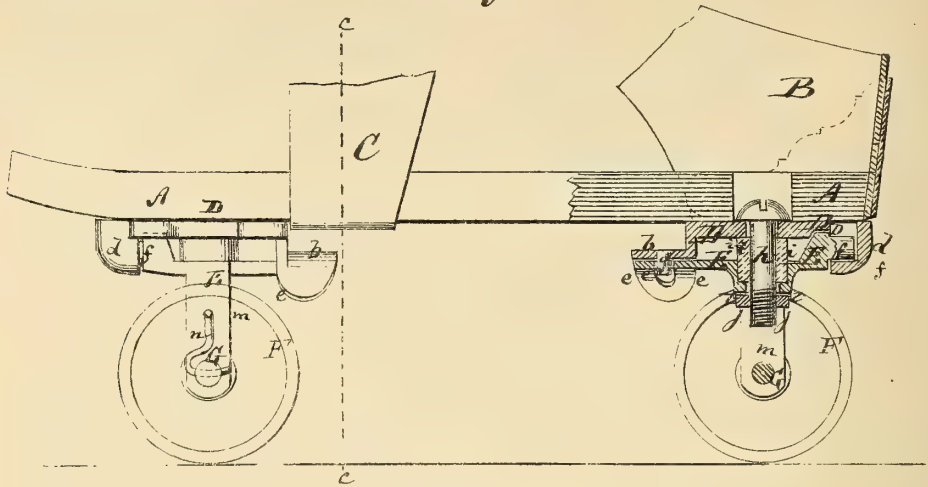


Fig. 2.

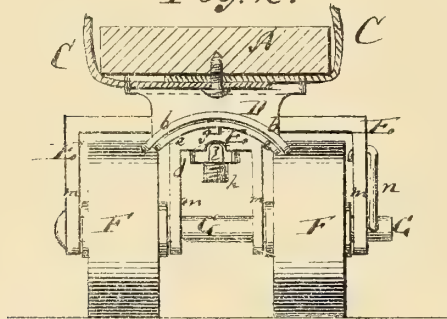


Fig. 3.

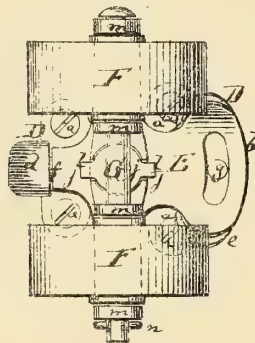


Fig. 4.



Witnesses:

E. Wolff.
Francis M. A. de

Inventor:

J. H. Fenton.
PER *Munroe*
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN H. FENTON, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 122,376, dated January 2, 1872.

Specification describing a certain Improved Roller-Skate, invented by JOHN H. FENTON, of Indianapolis, in the county of Marion and State of Indiana.

This invention relates to a new construction and arrangement of devices whereby wheels or rollers are attached to the foot-support of a skate in such a manner as to enable the performer to execute all of the varied evolutions of skating on a smooth floor by the same or a similar motion of the body as that employed in propelling the skater on ice.

In the accompanying drawing, Figure 1 is a side elevation, partly in section, of my improved roller-skate. Fig. 2 is a vertical transverse section of the same, the line *c c*, Fig. 1, indicating the plane of section. Fig. 3 is a bottom view of the roller-frame or hanger. Fig. 4 is a bottom view of the saddle-plate.

Similar letters of reference indicate corresponding parts.

A in the drawing represents the foot-support of the skate. B is the heel-strap and brass plate; C, the toe-strap; all these parts being of suitable kind and style. To the under side of the foot-support is attached, by screws *a a*, the saddle-plate D, comprising the segmental concave bearing *b* and a socket, *d*. E is the roller-frame or hanger, comprising the segmental convex bearing *e* and the projecting pivot *f*, which correspond respectively with and work in the concave bearing *b* and socket *d*. The convex bearing *e* on the hanger-frame is slotted, and through the slot passes a pintle, *g*, that projects downward from the concave plate *b* of the saddle and guides the movable hanger-frame in a regular direction; also serving as a check in preventing the bearing *e* from traveling too far. *h* is a screw which passes through the foot-support and the saddle-plate, its head resting on the top of the latter; also through a rubber cushion, *i*, and the roller-frame E, and is secured at the bot-

tom by a nut, *j*. This nut is provided with projecting pins or trunnions *l l*, which rest in corresponding grooves in the under side of the hanger, which, when it vibrates on its pivot *f*, will rock also on said trunnions of the nut and thus have the necessary freedom of motion. F F are the wheels or rollers, hung on an axle, G, which is secured in projecting ears *m m* of the hanger. *n* is a hooked wire which holds the axle G in place, preventing longitudinal displacement by passing through a hole in the end of the same. This wire is secured at its upper part by passing through an ear or leg, *m*, of the hanger E, and being bent downward on the inside thereof, as shown in Fig. 2. Its lower end is passed through the axle. Being suspended in a line beyond the center of the axle G, the wire is retained in its proper place by its greater weight at the lower end, compelling it always to seek a perpendicular, thus effecting a very neat, cheap, and secure fastening for the axle. The rubber cushion *i* is interposed between the hanger-frame and saddle, being let into a cavity or box of the hanger, as shown in Fig. 1. It yields to the side pressure of said box, and, acting in its natural manner, returns the hanger to its original position when the pressure is removed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The saddle-plate D, having the concave segmental bearing *b*, pintle *g*, and socket *d*, substantially as herein shown and described.

2. The wheel-frame or hanger F, slotted, and provided with the convex segmental bearing *e*, pivot *f*, and rubber cushion *i*, substantially as and for the purpose herein shown and described.

JOHN H. FENTON.

Witnesses:

JOHN FENTON,
J. G. LIGHTFORD.

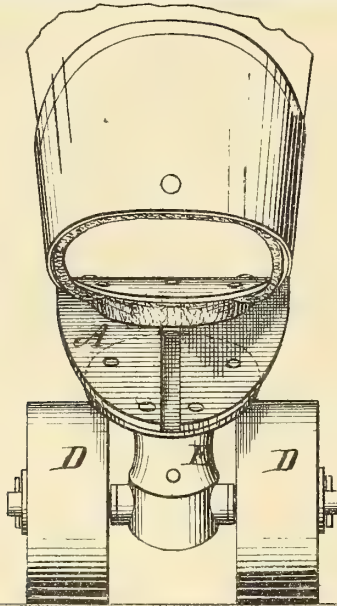
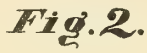
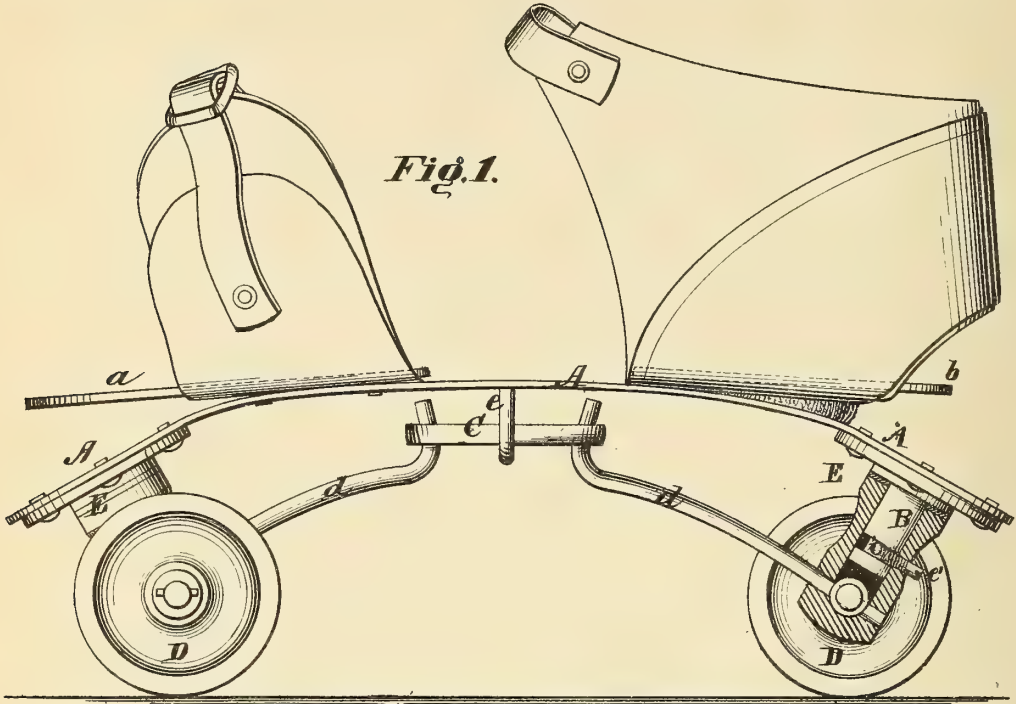
(143)

J. A. TODD.

Improvement in Roller-Skates.

No. 131,234.

Patented Sep. 10, 1872.



Witnesses.

C. H. Peunye.
Saml. A. Wolfe.

Inventor.

John C. Todd.

UNITED STATES PATENT OFFICE.

JOHN A. TODD, OF SACRAMENTO, CALIFORNIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 131,234, dated September 10, 1872.

Specification describing an Improved Skate, invented by JOHN A. TODD, of the city and county of Sacramento and State of California.

In the accompanying drawing, Figure 1 is an elevation, and Fig. 2 a rear view, of my improved skate.

My invention has for its general object to enable the skater to accomplish on roller-skates, with ease, grace, and confidence, certain complicated and dextrous movements (which have been heretofore done only with difficulty and excessive fatigue) by a simple construction, which renders the skates light, easy for the feet, strong, durable, and inexpensive.

In the drawing, A indicates the spring and main bottom plate of the skate. It is bent downward at each end so as to describe nearly the arc of a circle. The fastening-straps are shown attached to the horizontal plates *a b*, which are in turn riveted to the plate A; but the straps may be attached directly to the plate A, and the plates *a b* entirely dispensed with. C is a rubber loop, passing through the staple *e* and connecting the ends of bent arms *d d*, which are rigidly connected with the axles of the rollers D D so as to turn or have a corresponding movement with them. B and E indicate posts, which are made in two parts, one fitting within the other, and secured together by a screw and groove, *e' i*, so that one may turn on the other as a sleeve on a shaft. The connection is in fact of the nature of a swivel-joint. The inner or pivot parts of the posts are provided with horizontal flanges, whereby they are riveted to the ends of the

plate A. Thus the posts stand at an inclination toward each other at all times and at an angle to the floor, but the angle must be other than a right angle. The axles of the wheels D are rigidly connected with the outer parts E of the posts.

In practice, when the skater wishes to turn he naturally inclines one or both feet inward, which, of course, causes the spring-plate to assume an angle longitudinally to the floor, and, by consequence, the posts are turned outward or inward, as the case may be. The axles, being rigidly connected with the hollow parts of the posts, are necessarily affected by this movement so as to throw them out of parallelism to each other, the outer wheels moving further apart, and the inner wheels moving nearer together. Thus the skate will describe a circle whose radius is limited mainly by the elastic loop C and the will or skill of the skater. Thus the skater has but to incline his foot or feet to one side or the other in order to describe a circle or arc of a circle.

The loop C may be varied in strength, according to the skill or weight of the skater.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the posts B and E with the bent ends of the spring-plate A, the arms *d d*, axles and wheels, the loop C, and staple *e*, all constructed and arranged as specified.

JOHN ATHELING TODD.

Witnesses:

C. H. P. MUM,
SAML. A. WOLFE.

O. H. DODGE.

Roller Skates.

No. 136,711.

Patented March 11, 1873.

Fig 1

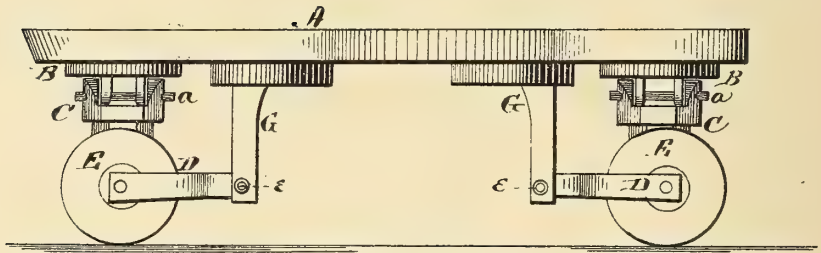


Fig 4

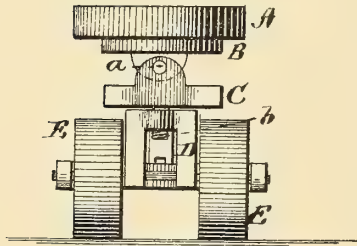


Fig 5

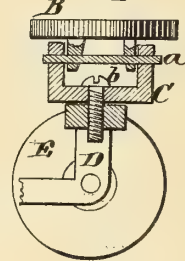


Fig 3

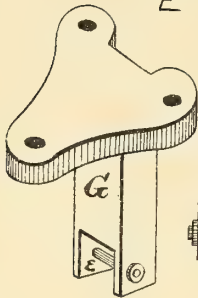
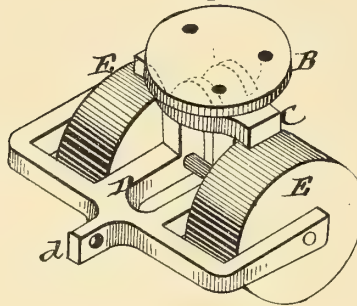


Fig 2



Witness:
Francis L. Curand
C. L. Everts.

Inventor.
Oliver H. Dodge,
per
Charles Mason
Attorneys.

UNITED STATES PATENT OFFICE.

OLIVER H. DODGE, OF JACKSON, TENNESSEE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. 136,711, dated March 11, 1873.

To all whom it may concern:

Be it known that I, OLIVER H. DODGE, of Jackson, in the county of Madison and in the State of Tennessee, have invented certain new and useful Improvements in Circular-Running Roller-Skates; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of the running-gear of circular-running roller-skates so as to turn the shortest curve without the use of springs or other unreliable fastenings for the trucks.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of my skate. Fig. 2 is a perspective view of one of the trucks. Fig. 3 is a perspective view of a guide-post attached to the under side of the foot-board. Fig. 4 is an end view, and Fig. 5 a vertical section, of one of the trucks.

A represents the foot board or plate to which the foot is strapped. This foot board or plate rests upon two rocking bolsters, B B, attached to its under side—one at the toe and the other at the heel. To each of these rocking bolsters is hinged, by means of a pin, *a*, the swinging bolster C, and to the under side of each swinging bolster is fastened the truck-frame D by means of a single screw, *b*, pass-

ing loosely through the bolster and screwed into the center of the truck-frame. In each frame D are mounted two rollers, E E. G G represent two guide-posts attached to the under side of the foot-board A—one in rear of the front truck, and the other in front of the rear truck. These posts drop low enough to receive, in a slot formed in the lower end of each, a projecting tongue, *d*, from the respective truck-frames. These tongues project, one from the rear of the front truck-frame and the other from the front of the rear frame, and are secured in the slots of their respective guide-posts by a loose-fitting pin, *e*.

By this means the axes of the rollers are forced, by simply rocking the foot, to an angle corresponding with the incline of the foot, the front rollers being turned toward the side the foot is inclined to, and the rear rollers toward the opposite side.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the foot-pad A, of the rocking bolster B, pin *a*, swinging bolster C, screw *b*, rollers E E, and truck D, with projecting tongue *d* hinged by the pin *e* in the bifurcated and beveled end of the post G, all substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of November, 1872.

OLIVER H. DODGE.

Witnesses:

J. R. CHAPPELL,
L. T. LINDSEY.

W. P. GREGG.
Roller Skates.

No. 138,018.

Patented April 22, 1873.

Fig. 1.

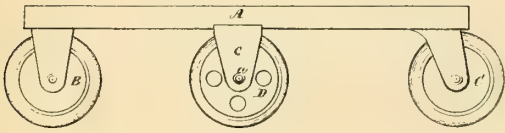


Fig. 3.

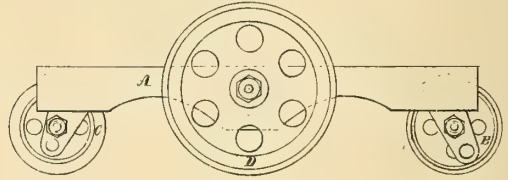


Fig. 2.

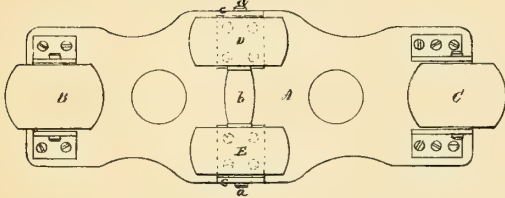


Fig. 4.

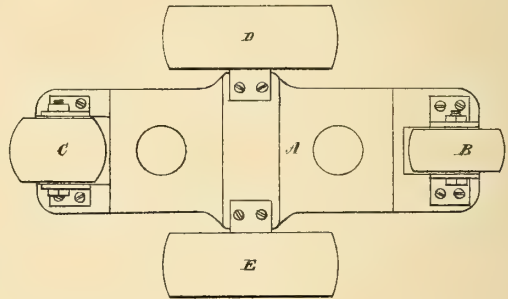


Fig. 7.

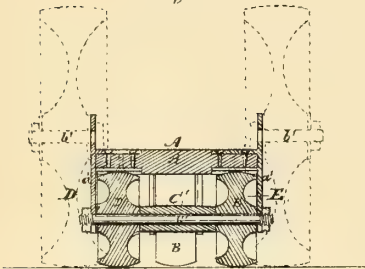
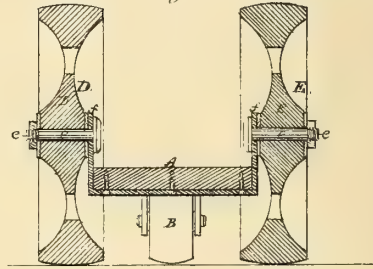


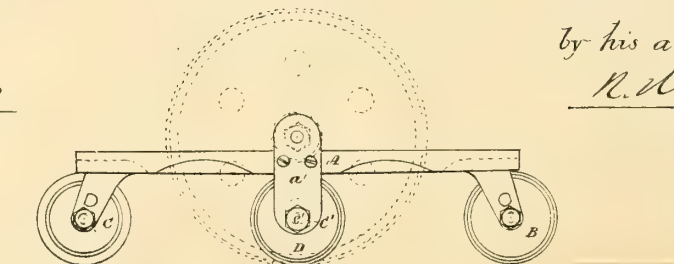
Fig. 5.



Witnesses

S. A. Piper
J. A. Brown

Fig. 6



W. P. Gregg.

by his attorney
R. H. May

UNITED STATES PATENT OFFICE.

WASHINGTON PARKER GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **138,018**, dated April 22, 1873; application filed October 21, 1869.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, county of Suffolk and State of Massachusetts, have made a new and useful invention in respect to Parlor or Roller Skates; and do hereby declare the nature of my said invention, and the manner in which it is to be performed, to be fully described in the following specification, reference being had to the accompanying drawing making part thereof.

My invention consists in making the peripheries of the wheels globular, like sections of a sphere, and in a novel arrangement of the middle wheels of the four relatively to the stock.

Of the accompanying drawing, Figure 1 is a side elevation, and Fig. 2 a bottom view of one variety of my improved roller-skate. Fig. 3 is a side elevation, and Fig. 4 an under side view, of another variety of the skate. Fig. 5 is a transverse section of a skate made with the journals of its side-wheels raised above the stock.

In the drawing, A denotes the stock or foot-rest; B, the toe-wheel; C, the heel-wheel; and D and E, the two middle wheels. The two middle wheels are to be applied to the stock so as to be capable of revolving independently of one another. Each of the wheels shown in the figures is a portion of a sphere; or, in other words, has a globular periphery. In Fig. 2 the middle wheels are supported by, and so as to be capable of separately revolving, on a common axle, *a*, they being kept apart by a shoulder piece, *b*, arranged between them on the axle; and they are arranged beneath the stock to make the skate more compact, light, and comely for in-door use. In Figs. 3 and 4 the journals of the two side wheels are shown as projected from the opposite edges of the stock. In Fig. 5 the journals *e e* of the side wheels are shown as arranged above the stock so as to project from ears *f f* extended upward from the stock; this latter arrangement of the journals being to enable the stock to be brought nearer to the ground, and wheels of larger diameter to be used than could well be employed were the journals disposed relatively to the stock in manner as shown in Figs. 1, 2, 3, and 4. I prefer to have all the wheels

provided with globular peripheries, because of their peculiar qualities, and the greater facilities they afford to the skater for turning about and moving in curves, and for assuming inclined positions without injuriously straining the ankles or joints. The journals of the wheels may be applied so as to be adjustable at different distances from the stock. Fig. 6 is a side elevation, and Fig. 7 a transverse section, of a duplex parlor-skate embodying my invention.

In this skate there are two arrangements for middle wheels. An axle-supporter, *a'*, extends both above and below the stock A, at each of its opposite edges. One journal, *b'*, projects externally from the upper part of it. Another journal, *c'*, extends inwardly from the lower part of it. These journals may be fixed in the part *a'* so as to be easily removable from it, as occasion may require. The lower journals are to support a set of small wheels, the upper journals being to support a larger set of wheels, either set being employed at the option of the skater.

In thus arranging the journals both above and below the stock the skater, at his pleasure, can, by taking off the small wheels and their journals, use the larger side wheels, and by removing the latter and their journals he can restore and use the smaller wheels with their journals. The fixtures for the support of the upper journals also serve to protect the foot from sliding sidewise on the stock.

I claim—

1. In roller-skates having four wheels, arranging the journals of the two large side wheels above the stock, substantially as shown in Fig. 5, for the purpose described.

2. As a new article of manufacture, a convertible skate, which can be used either with or without the large side wheels D E, Figs. 6 and 7, at the option of the wearer, becoming, when said wheels are dispensed with, the four-wheeled skate represented in Figs. 1 and 2, and when they are applied the skate represented in Figs. 6 and 7.

WASHINGTON PARKER GREGG.

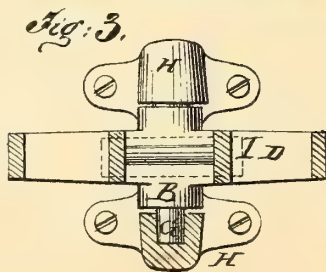
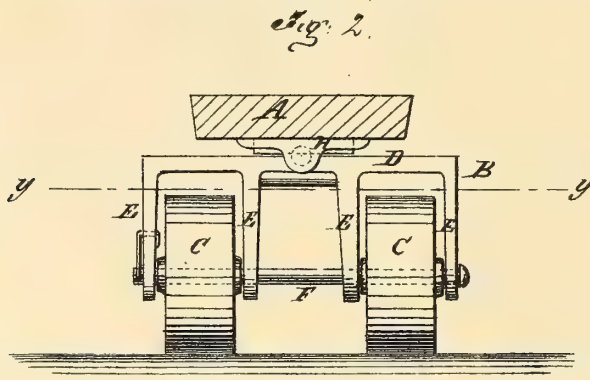
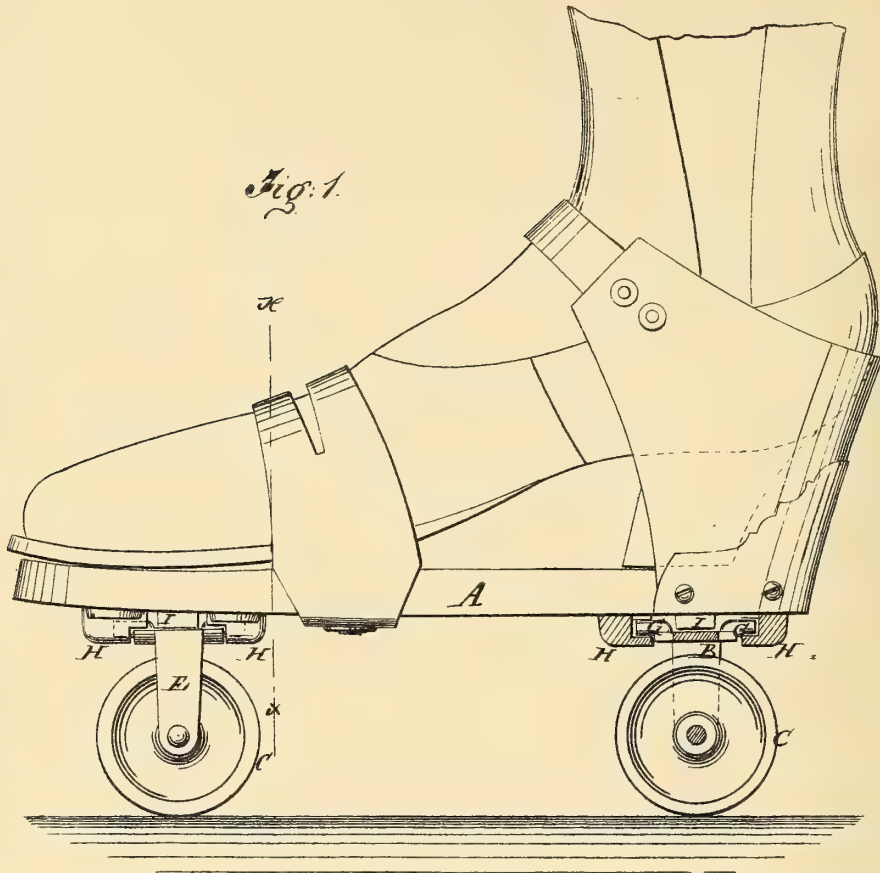
Witnesses:

W. F. STORY,
M. Mellen, Jr.

J. H. FENTON.
Roller-Skates.

No. 151,768.

Patented June 9, 1874.



Witnesses:

Chas. Nida
Edgwick

Inventor:

J. H. Fenton
Per *Wm. L. S.*
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN H. FENTON, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **151,768**, dated June 9, 1874; application filed February 28, 1874.

To all whom it may concern:

Be it known that I, JOHN H. FENTON, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification:

The invention consists in a novel construction of bracket for roller-skates, constructed as hereinafter described and claimed.

Figure 1 is a side view, showing the skate attached to the foot. Fig. 2 is a vertical cross-section of Fig. 1, taken on the line *x x*. Fig. 3 is a horizontal section of Fig. 2, taken on the line *y y*.

Similar letters of reference indicate corresponding parts.

A represents the sole or bottom of the skate. B is the bracket, and C the rollers. A bracket with two rollers is placed at the toe, and also at the heel of the skate, the two pairs being duplicates of each other, and fastened to the sole in the same manner. The bracket consists of a plate, D, having four pendent arms, E, through which the spindle F passes, on which spindle the rollers revolve. The plate D is provided with two pivots, G, one on each side, and opposite to each other. H H are boxes or caps, which receive the pivots, and which are fastened to the sole of the skate by

screws or rivets, as seen in the drawing. I is a spring, of rubber or other suitable material, which is placed between the plate and the sole. The brackets are placed transversely across the sole, and the boxes or caps on the pivots are so formed that the bearing or weight of the person skating is received by the springs I, the elasticity of which springs gives a flexibility which allows the foot to turn in or out to guide the skates, while the pivots confine the bracket and rollers to their places.

The rollers are preferably made of wood, and revolve on the spindle between the arms E, as seen in the drawing. Each foot of the skater is, therefore, supported on four rollers, so placed that he can readily balance, and, by virtue of the elasticity afforded by the springs, turn in any direction, and control his movements at will.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A bracket for roller-skates, consisting of a plate, D, having four pendent arms, E, and two pivots, G G, as shown and described.

JOHN H. FENTON.

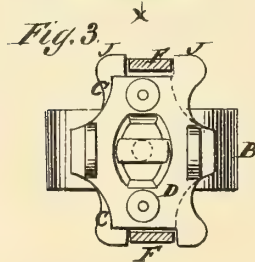
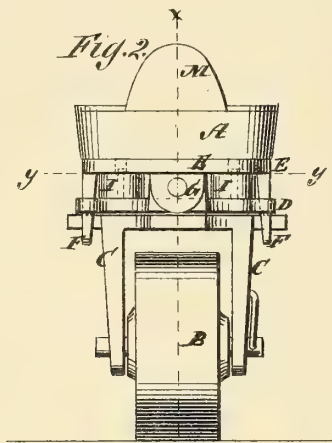
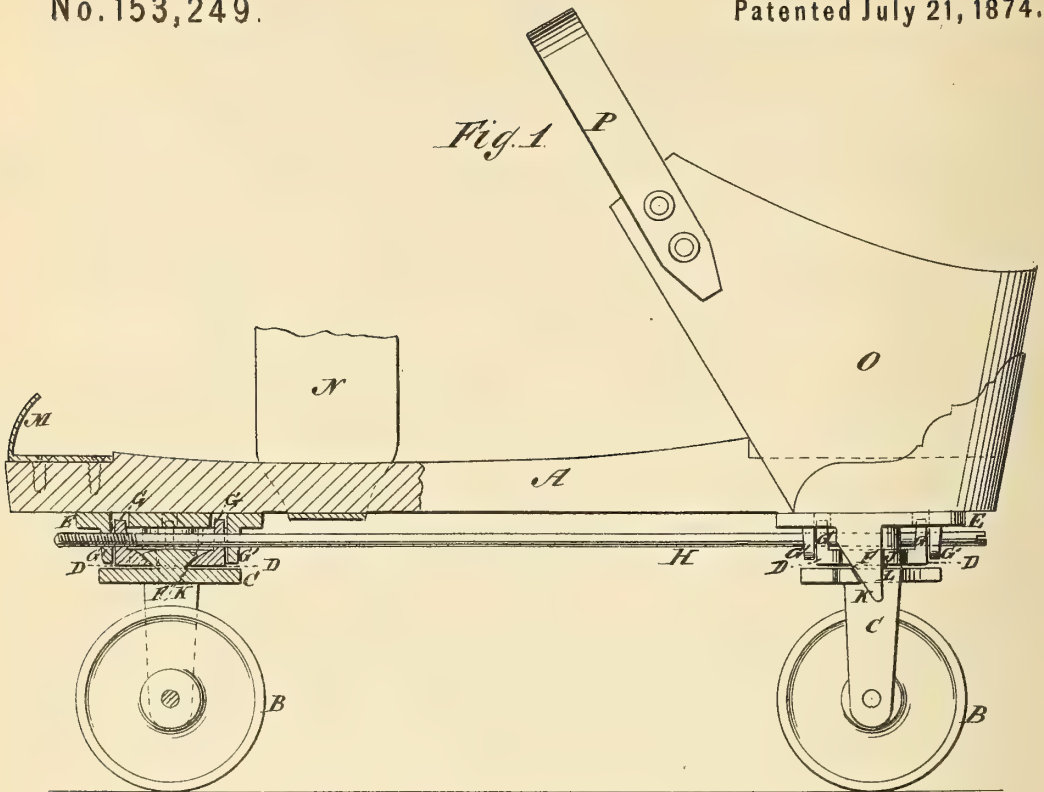
Witnesses:

JOSEPH D. SCAPP,
HENRY W. WHITE.

J. FENTON.
Roller-Skates.

No. 153,249.

Patented July 21, 1874.



WITNESSES:

E. Wolff
Chadwick

INVENTOR:

J. Fenton
Wm. H. L.
ATTORNEYS.

BY

UNITED STATES PATENT OFFICE.

JOHN FENTON, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **153,249**, dated July 21, 1874; application filed April 11, 1874.

To all whom it may concern:

Be it known that I, JOHN FENTON, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Parlor-Skates, of which the following is a specification:

The object of this invention is to so construct parlor-skates that all the movements and evolutions performed on ice may readily be performed on a smooth floor; and it consists of the construction and arrangement of parts hereinafter set forth and described.

In the accompanying drawing, Figure 1 is a side view of the skate, partly in section, as on the line *x x* of Fig. 2. Fig. 2 is a front-end view. Fig. 3 is a horizontal section of Fig. 2, looking down from the line *y y*.

Similar letters of reference indicate corresponding parts.

A represents the foot-board of the skate, which may be made of either wood or metal, to which the wheel-frames are attached, as well as the straps for fastening the skate to the foot. B represents the wheels, which revolve in the forked bracket-piece C C. These bracket-pieces are attached by loose rivet-connections to the hinged plates D D. E E are bed-plates securely fastened to the foot-piece A by means of screws or rivets. These pieces E E are provided on each side with triangular or wedge-shaped ears F, which extend down on each side of the skate, as seen in the drawing. The plates D and E are provided with ears G G', which lap past each other, as seen, through which the rod H' passes, so as to form a hinge-joint with the said bracket and plates D E. Between the plates D E are confined india-rubber disk-springs I, one each side of the center of each frame. (See Fig. 2.) The bracket-piece C C and plates D D are provided with lugs J, which project outward and receive the

hanging wedge-shaped ears F between them. The rubber springs allow the foot-piece to rock from side to side, while the wedge-shaped ears F keep the brackets and wheels in position. The central rivet, which connects the bracket D to the plate E, allows the bracket and wheel to turn when the skate is thus rocked. The weight being thrown upon either side, the skater is enabled to turn and change his course at will, and perform all the movements and evolutions on a smooth floor that he could on ice with the ordinary ice-skates. The pressure on the side of the parlor-skate compresses the springs upon that side and forces down the wedges F, one of the edges of which only, K, is inclined, and these edges bear against the lugs on the wheel-brackets and affect the brackets and wheels only, the other edges, L, of the ears F, being vertical, as seen in the drawing, and in contact with the lugs J of the plates D D. M is the toe-piece attached to the foot-board A. N is a strap over the ball of the foot for fastening the skate. O is the heel-piece, with the strap P for buckling over the instep.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The wheel-frame of the skate, consisting of the bed-plate E, with the wedge-shaped ears F, the hinge-plate D, wheel-bracket C, and springs I, constructed and arranged to operate substantially as shown and described, for the purposes specified.

2. In combination with the wheel-frame of a skate, constructed substantially as described, the hinge-rod H, arranged as and for the purposes described.

JOHN FENTON.

Witnesses:

GEORGE T. DANIELS,
JAMES W. MEWHING.

O. F. BOWEN.
Roller-Skates.

No. 153,474.

Patented July 28, 1874.

Fig. 1.

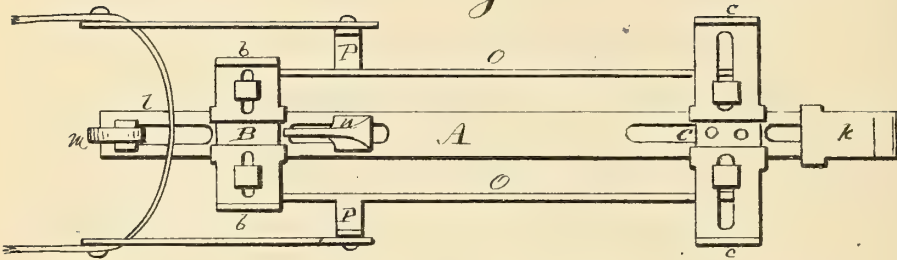


Fig. 3.

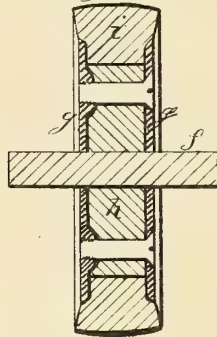
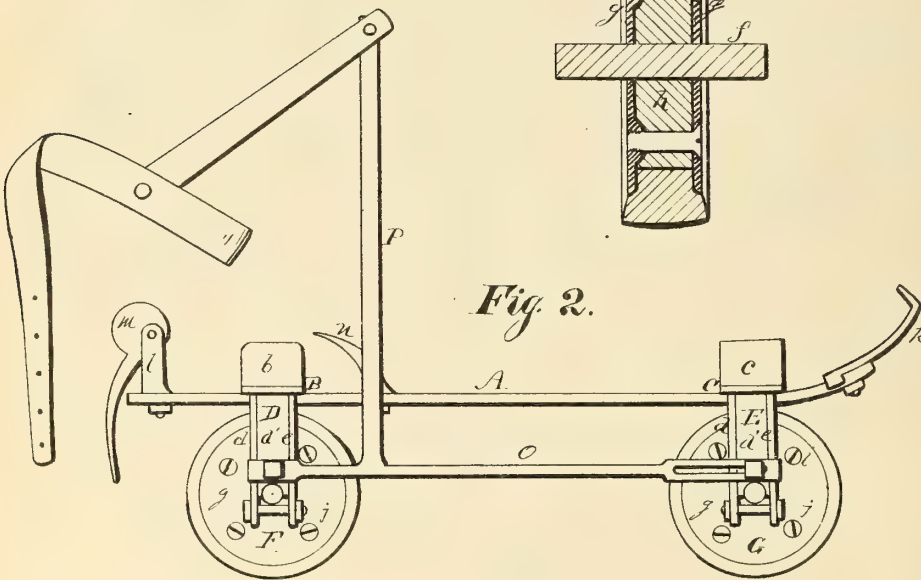


Fig. 2.



Witnesses.

Geo. W. Tibbitts
E. M. Whitcomb

Inventor.

O. F. Bowen

UNITED STATES PATENT OFFICE.

OLIVER F. BOWEN, OF OBERLIN, OHIO.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **153,474**, dated July 28, 1874; application filed June 6, 1874.

To all whom it may concern:

Be it known that I, OLIVER F. BOWEN, of Oberlin, in the county of Lorain and State of Ohio, have invented an Improved Roller-Skate, of which the following is a specification:

This invention relates, first, to the construction and arrangement of an adjustable framework for a two-wheel skate; and, second, to the adjustable mechanism for fastening the skate to the shoe in a very expeditious manner; and, third, to the construction of the wheels or rollers.

To enable others to fully understand my invention, I will proceed to describe the same in detail, by the aid of the accompanying drawing, in which—

Figure 1 is a top or plan view. Fig. 2 is a side elevation of my improved skate. Fig. 3 is a detached sectional view of one of the wheels or rollers.

A, Figs. 1 and 2, is a flat bar having two cross-bars, B C, attached, the rear one, B, permanently, and the front one, C, adjustably, being secured in a slot in the bar A by means of set-screws. To each end of both the cross-bars B C are attached adjustable angle-pieces *b b c c*, by means of set-screws passing through slots. These are to clamp the skate to the sides of the sole and heel of the shoe. To the under side of the cross-bars B C are attached pillar-blocks D E, in the lower ends of which are the bearings for the wheels F G. These pillar-blocks consist of two strips of iron, *d e*, having a block of wood, *d'*, secured between them, the lower end of said blocks being hollowed out to form the bearings for the journals of the wheels F and G. The wheels F G consist of a small shaft, *f*, two metal disks, *g g*, and a wooden wheel, *h*, placed between them on the shaft, and which is somewhat smaller in diameter than the metal disks, which form an annular groove for the rubber ring *i*. The disks *g g* and *h* are firmly secured together by screws *j j*, thus clamping a part of the rubber ring in the said annular groove, firmly retaining it in place. To the front end of the bar A,

which is bent upward, is affixed an adjustable toe-piece, K, and to the rear end is affixed an adjustable slotted post, *l*, having in the top a cam and lever, *m*. In front of the rear cross-bar B is placed, in a slot in the bar A, a hook, *n*.

These devices, together with the angle-pieces *b b c c*, are for securing the skate to the shoe, the operation of which is as follows: Having adjusted the several parts, the skate is placed on the sole of the shoe, the heel being between the cam *m*, which is turned down, and the hook *n*. Now, by turning the cam up by means of its lever, the foot is forced forward between the clamps *b b c c*, and the point of the hook *n* into the front side of the heel of the shoe. The skate is then firmly attached to the shoe, with the lever standing upright.

O O are side bars secured to the sides of the pillar-blocks D E, which help to brace them, and from them arise two arms, P P, made in two parts and jointed at a point opposite the ankle-joint, and are provided with a strap to be buckled around the leg. These are for the purpose of bracing the ankle of the wearer.

This mode of fastening the skate is applicable to both the ice and the floor skate.

Having described my invention, I claim—

1. In a roller-skate, the bar A, cross-bars B C, angle-pieces *b c*, pillar-blocks D E, the wheels F G, the bars O O, and upright ankle-support P, all constructed substantially as described.

2. The toe-piece K, the post *l*, the cam and lever *m*, and the hook *n*, in combination with the subject-matter of the above claim, as and for the purpose set forth.

3. The wheels F G, composed of the disks *g g*, wooden wheel *h*, rubber ring *i*, and shaft *s*, all as shown and described.

O. F. BOWEN.

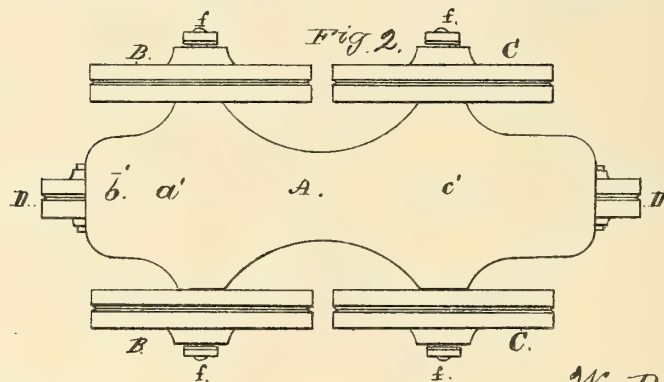
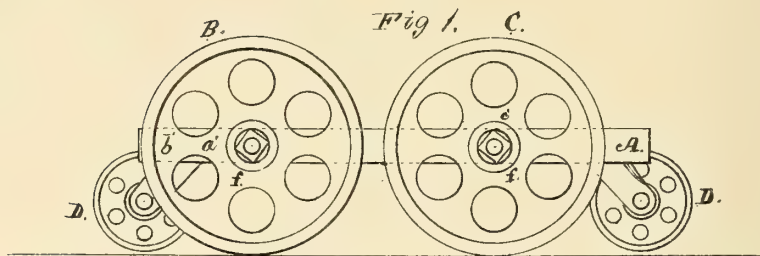
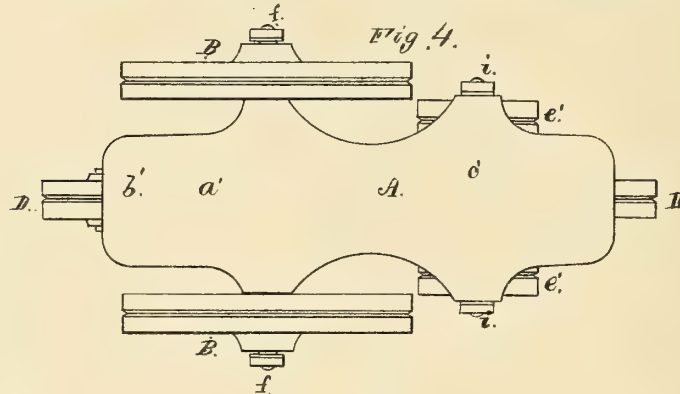
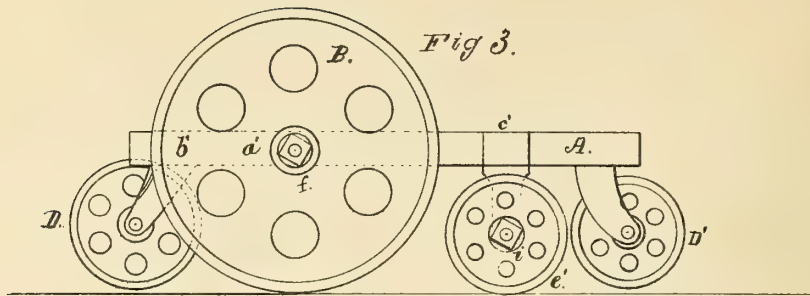
Witnesses:

GEO. H. TIBBITTS,
GEO. A. KOLBE.

W. P. GREGG.
Roller-Skates.

No. 153,945.

Patented Aug. 11, 1874.



Witnesses.

H. M. Proulx
Geo. Gray

W. P. Gregg.

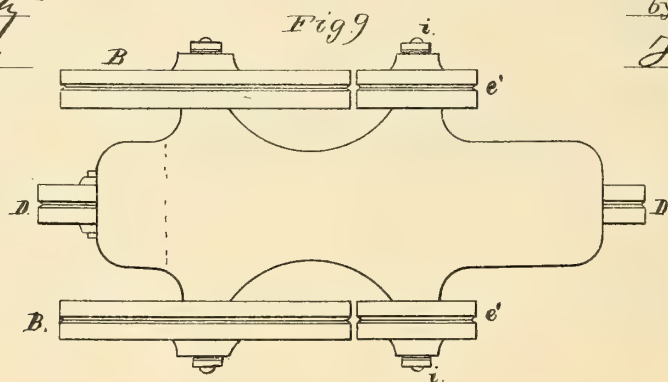
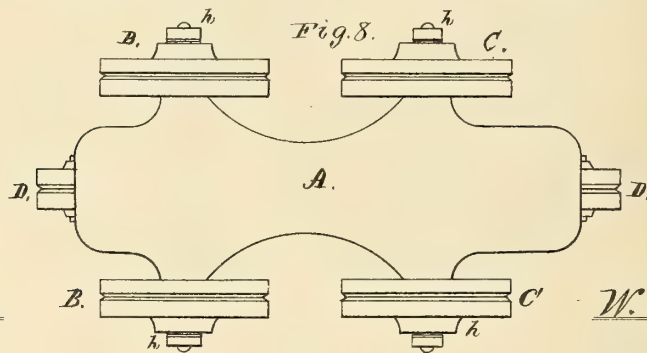
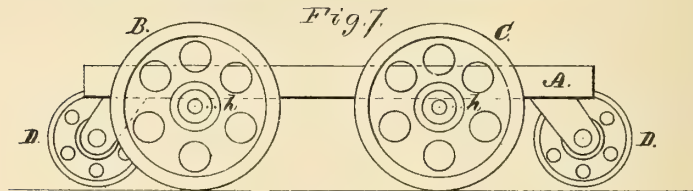
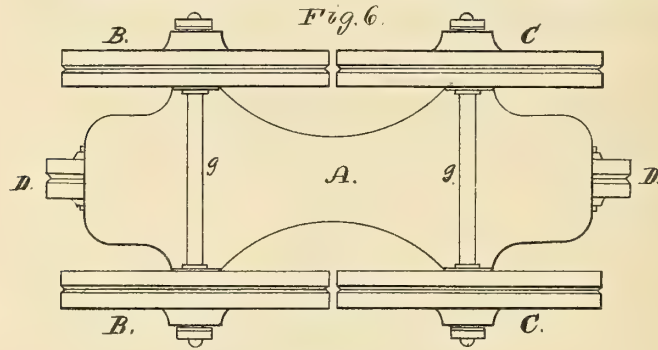
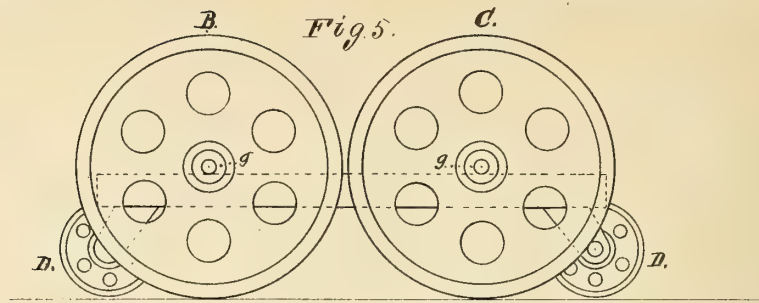
by his attorney.

J. P. Hale.

W. P. GREGG.
Roller-Skates.

No. 153,945

Patented Aug. 11, 1874.



Witnesses

Wm. Proby
Geo. Gray

W. P. Gregg
by his attorney
F. P. Hale.

UNITED STATES PATENT OFFICE.

WASHINGTON P. GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **153,945**, dated August 11, 1874; application filed April 23, 1874.

To all whom it may concern :

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to the class of roller-skates the patent for which was granted to me July 25, 1865, and the reissue December 23, 1873. It consists, chiefly, in having four outside driving-wheels, and also in novel arrangements of the wheels and rollers, relatively to each other, and the stock or foot-rest, the same being designed for varied exercises for recreation and health in halls and gymnasiums, and for traveling on suitable sidewalks and places.

Of the drawings, Figure 1 is a side view of the stock, two of its four outside wheels, and the two smaller rollers partially under the toe and heel. Fig. 2 is a top view of the stock and its four outside wheels and said two smaller rollers. Fig. 3 is a side view of the stock, one of two outside wheels, one of its two small side wheels, and the two small rollers partially under the toe and heel. Fig. 4 is a top view of the same. Fig. 5 is a side view of Fig. 1 with axles above the stock. Fig. 6 is a top view of the same. Fig. 7 is a side view of Fig. 1 with axles below the stock. Fig. 8 is a top view of the same. Fig. 9 is a top view of Figs. 3 and 4 with the two small side wheels outside of the stock upon their axle prolonged.

To carry my invention into effect, I, instead of having several small rollers under the stock, like those in common use, and to avail myself, when desirable, of more than the two outside wheels, as used under my patent of July 25, 1865, reissued December 23, 1873, attach to the stock or foot-rest A, in Figs. 1 and 2 of the drawings, two comparatively large outside wheels, B B, one at each side of the front *a'* of the heel *b'* of the stock A, the more easily to sustain each side of the foot between the

heel *b'* and the ball *c'* of the stock, as well as the more easily to surmount obstacles, and for driving and turning; and I also attach two other comparatively large outside wheels, C C, in Figs. 1 and 2, one at each side of the ball *c'* of the stock, the more easily to sustain each side of that part of the foot, and to surmount obstacles, and for driving and turning; and, in combination with these four outside wheels B B C C, I also attach two smaller rollers, D D, one partly under the toe and the other partly under the heel of the stock, for the support of the heel and toe, and for more readily turning at the heel and toe. I vary the size of the diameter and position of the wheels of some of these skates for in-door use, and in order to vary in exercising at the heel and toe, and in practicing different feats and evolutions, and arrange them so that instead of having two driving-wheels C C, as in Figs. 1 and 2, at each side of the ball, I have two smaller wheels, *e' e'*, as in Figs. 3 and 4, one under each side of the ball *c'*, and so use them with the two large driving-wheels B B, one at each side of the front *a'* of the heel *b'* of the stock, in combination with two smaller rollers, D D, partly under the toe and heel of the stock, as seen in Figs. 3 and 4. The stock or foot-rest, with its wheels and rollers thus arranged, may be reversed, so that the skater may use the same either way. The two small side wheels may be applied as readily to the stock having the four larger driving-wheels at its sides as to the stock with only the two larger driving-wheels at its sides. Therefore some of these skates are made that way as well as the other. All that is required is to remove the two front outside driving-wheels in Figs. 1 and 2, with their axle, and then fasten under the ball, by screws or otherwise, the axle-holder, with its axle and two small side wheels, as seen in Figs. 3 and 4. So, when it is desirable to have the two small side wheels outside of instead of under the ball of the stock, I withdraw their axle and substitute for it a longer one, put upon its ends the same two small wheels, and they are then outside of the stock, as seen in Fig. 9. The axles of the four outside wheels may project from the edges or sides of the stock, as at *fffff* in Figs. 1, 2, 3, and 4. They may

be above the stock, as at *g g g g* in Figs. 5 and 6, or below the stock, as at *h h h h h h* in Figs. 7 and 8. They may be lower down, like the axles *i i i* of the small wheels under each side of the ball in Figs. 3 and 4, as well as higher than the top of the stock. Thus may be provided high or low journals for the largest and smallest four side wheels practicable, with the upper parts of their peripheries above, below, or on a level with the plane of the upper surface of the stock, as preferred. The outside wheels of some of these skates are made alike in diameter. In general, I prefer that the two rear outside wheels should differ in size from the two at the ball, for easier turning. I also prefer the largest wheels for outdoor use. The small rollers *D D* revolve on axles in common axle-holders under the toe and heel. I prefer that none of them should come down so low as the side wheels. I also prefer, especially for novices and the young, that the small rollers partially under the toe and heel should be used as set forth.

One or both can be dispensed with by experts or practiced athletes, and sometimes by others upon suitable level surfaces, when said other wheels may be driven with great rapidity and effect.

In turning at the toe, and in inclining forward, the bearing is designed to be more or less on the small roller under the toe and the two wheels at the side of the ball. In turning at the heel, and in moving backward, the bearing is designed to be more or less on the small roller under the heel, and on the two wheels at the sides of the front of the heel. In gliding, the bearing is designed to be mainly on the two wheels at the ball and the two at the front of the heel, upon which the skater may stand upright, and move alike with firmness and speed, owing to the relative position of these four wheels, as well as to their size and number, the small rollers under the heel and toe affording additional support when required.

When the heel and toe are supported by small rollers, as I prefer they should be, one of the side wheels can be dispensed with; but I prefer it should not be.

When desirable, particularly for the smaller skates, I sometimes use a caster for one or each of the heel and toe rollers, as shown at *D'*, Fig. 3.

The stocks or foot-rests, wheels, journals, and other parts may be of any suitable materials, size, or description, and be fitted to the foot, and fastened on in any convenient manner.

Thus is produced a wheel-skate, not only supported at the toe and heel, but at each side

from heel to toe for novices, and at the same time calculated for diversified exercises, feats, and evolutions by different skaters.

Having described my invention, I claim as follows:

1. A skate stock or foot-rest having four outside driving-wheels attached directly to it, one at each side of the front of the heel, and one at each side of the ball of the stock, substantially as described.

2. A stock or foot-rest with four outside driving-wheels, one at each side of the front of the heel, and one at each side of the ball of the stock, in combination with one smaller roller under the heel and another under the toe, substantially as described.

3. A stock or foot-rest with one small wheel under each side of the ball, and one larger outside driving-wheel attached at each side of the front of the heel of the stock, substantially as described.

4. A stock or foot-rest with one small wheel under each side of the ball, and one larger outside driving-wheel attached at each side of the front of the heel of the stock, in combination with one small roller under the heel and another under the toe, substantially as described.

5. In a skate stock or foot-rest having four outside wheels, one at each side of the rear part, and one at each side of the front part, of the stock, whether in combination or not with a smaller roller partially under the heel and toe, the arrangement of said four outside wheels, so that the upper portion of their peripheries shall extend above the plane of the lower surface of the stock.

6. In a skate stock or foot rest having one small wheel under each side of the front part, and one larger outside wheel at each side of the rear part, of the stock, whether in combination or not with a smaller roller partially under the heel and toe, the arrangement of said outside wheels, so that the upper portion of their peripheries shall extend above the plane of the lower surface of the stock.

7. In each of the several specified combinations covered by the foregoing claims, in which a small roller or caster is employed partially under the heel and toe, the attachment of the outside wheels to the stock in such position that their tread shall be on a plane lower than that of said small rollers or casters.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of April, 1874.

WASHINGTON PARKER GREGG.

Witnesses:

F. P. HALE,

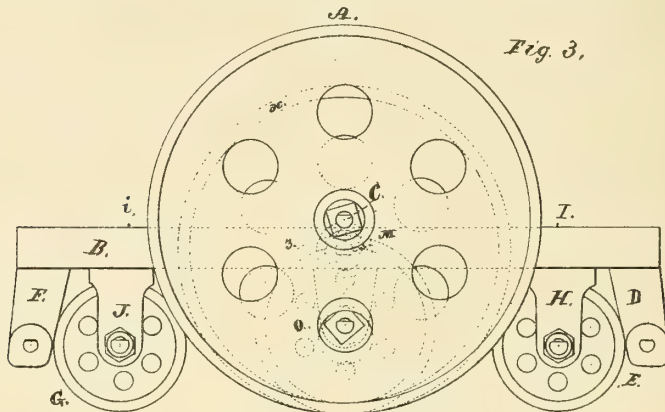
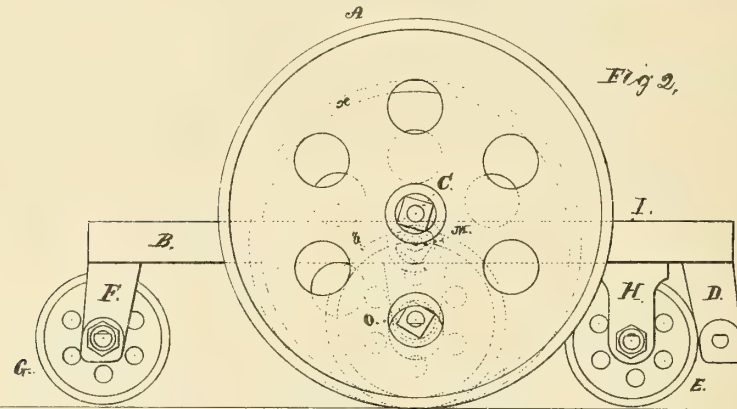
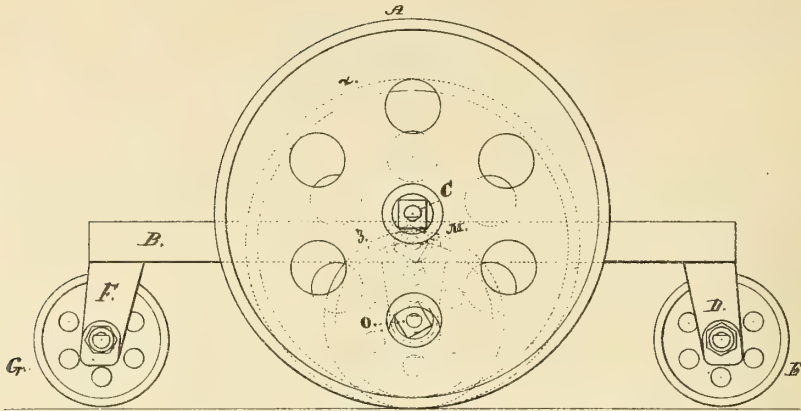
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Roller-Skates.

No. 153,946.

Fig 1.

Patented Aug. 11, 1874.



Witnesses

N. F. Hale
John R. Baker

Inventor

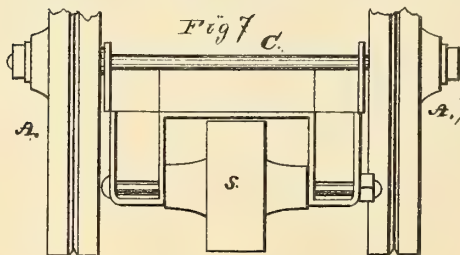
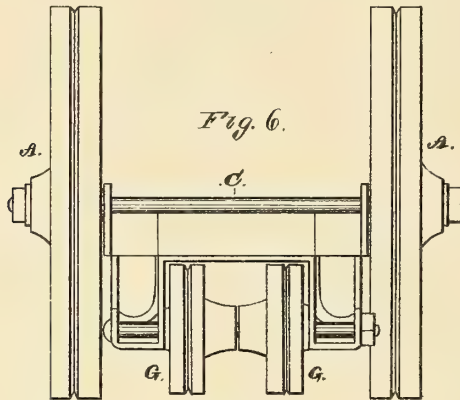
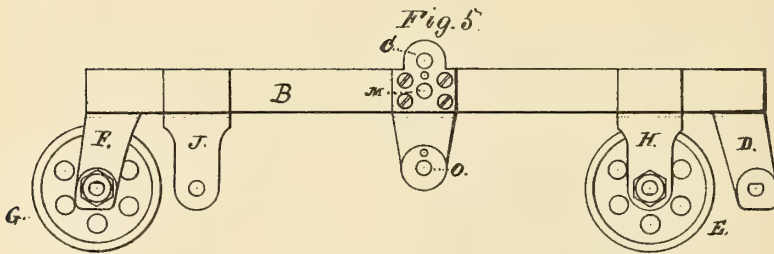
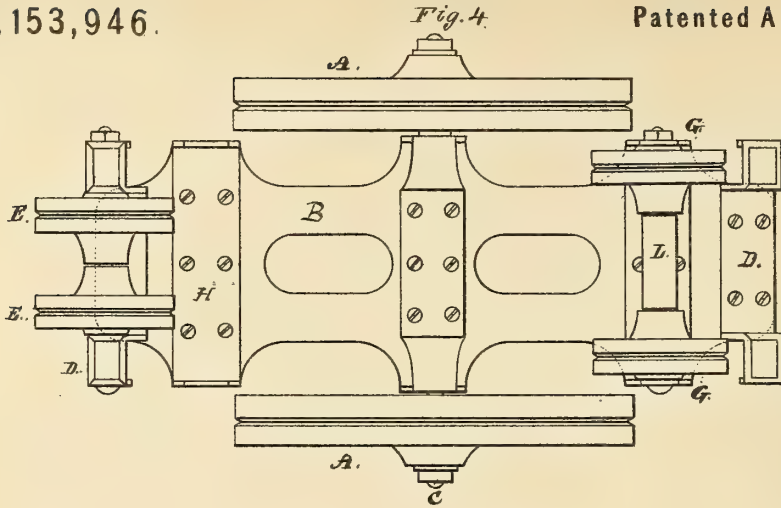
Washington P. Gregg



W. P. GREGG.
Roller-Skates.

No. 153,946.

Patented Aug. 11, 1874.



Witnesses.

F. P. Hale
John R. Baker

Inventor.

Washington Parker Gregg

UNITED STATES PATENT OFFICE.

WASHINGTON P. GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **153,946**, dated August 11, 1874; application filed June 15, 1874.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

In the said drawings, Figure 1 is a side view of the stock, one of its two outside driving-wheels, their axle across the stock, one of its two rollers partially under the toe, and one of the two partially under the heel, and dotted circles X and Z showing outside wheels of different diameters. Fig. 2 is a side view of the same stock, outside wheel, and axle, one of the two rollers under the front of the ball, and one of the two partially under the heel, and the same dotted circles X and Z. Fig. 3 is a side view of the same stock, outside wheel, and axle, one of the two rollers under the front of the ball, and one of the two under the rear of the front of the heel, and the same dotted circles X and Z. Fig. 4 is a bottom view of the stock, its two outside wheels, the axle-holder for the central axle under the stock, the axle-holders for the rollers under the stock, two rollers partially under the toe, and two under the rear of the front of the heel, and spool between the latter. Fig. 5 is a side view of the stock, its side wheels being removed, its front and rear axle-holders, one of its two small wheels under the front of the ball, and one of its two partially under the heel, an axle-hole above the stock for one set of drivers, another through the stock for a set less in diameter, and another through the brackets or axle-holder under the central part of the stock for a set still less in diameter. Fig. 6 is an end view of the stock, its two driving-wheels and their axle, and two of its rollers partially under the heel of the stock, Fig. 7 is an end view of the stock, its axle, and two driving-wheels, with one small supporting-roller under the toe.

My invention consists mainly in having two

driving-wheels, one on an outer axle at or near the middle of each side of the stock, in combination with four smaller rollers, two under each end of the stock or foot-rest, also in having two removable axles for the rollers under the stock, as hereinafter described.

In my patent of July 25, 1865, reissued December 23, 1873, I employ two driving-wheels outside of the stock, and also use them with one roller partially under the toe and another partially under the heel, as therein set forth. As useful as I deem skates made under this patent, yet when the wheels are very large and the stocks very long I prefer more support at the heel and toe, such as is provided in this present invention.

In carrying out my present invention, I arrange two driving-wheels, A A, one at or near the middle of each side of the stock B, upon an outer axle, C, extending across it. I also arrange on an axle in an axle-holder, D, two smaller rollers, E E, partially under the toe, and on an axle in another axle-holder, F, two such other rollers G G, partially under the heel of the stock, and then use said four rollers so arranged in combination with said two outside driving-wheels. When, as sometimes it is desirable to vary the position of the rollers under the stock, I withdraw the rollers E E and their axle from their position partially under the toe, and place their axle with them on it, in a third axle-holder, H, so that said rollers E E shall be under each side of the front of the ball I of the stock, as shown in Fig. 2, and then use said rollers E E with the two other rollers G G arranged partially under the heel, in combination with said two driving-wheels, one at each side of the stock, as aforesaid. With its wheels and rollers arranged as last described, the stock may be reversed and used either end first.

To make another desirable variation, I withdraw the rollers G G and their axle from their position partially under the heel, and place their axle with them on it in a fourth axle-holder, J, so that said rollers G G shall be under each side, i, of what I term the rear of the front of the heel of the stock, as shown in Fig. 3, and then I use the said rollers G G with the other two rollers, E E, under each side of the rear of the front of the ball, in com-

bination with said two driving-wheels, one at each side of the stock, as aforesaid.

Instead of employing two rollers under the toe end of the stock, I use for some of the shorter skates one small roller under the toe end, with two small rollers under the heel end, of the stock, in combination with said two driving-wheels, one at each side of the stock, as aforesaid, such single roller being shown in Fig. 7. When placed under the front of the ball and under the rear of the front of the heel, the small roller may be kept by a spool, L, Fig. 4, wider apart than when partially under the toe and heel, and if furnished with longer axles may be used outside of the stock, but not in combination with drivers so large as to interfere.

The smallest and largest outside driving-wheels practicable, it will be perceived, can be used with these skates, as their axles may be placed either in the sides of the stock, or below, or above it, according to the diameter of the wheels.

When desirable, as it often is, to have the axle through the sides of the stock, I make an axle-hole, M, as shown in Fig. 3, to receive the axle, and affix to each of the ends of said axle a driving-wheel, as shown in the dotted circle X, less in diameter than the two drivers for the axle across the stock, and then use said lesser driving-wheels in combination with said rollers under the stock at will, in each or any of the positions designated for them, as aforesaid; and when it is desired to have the axle of the outside driving-wheels below the plane of the upper surface of the stock, I make an axle-hole, O, through the axle-holder under the central part of the stock for the axle, affix to each of its ends a driving-wheel, less in diameter, as shown in the dotted circle Z, than the wheel for the axle through the sides of the stock; and then use said third set of drivers, in combination with said rollers under the stock, at will, in each or any of the positions designated for them, as aforesaid.

I consider the cheapest to be that with one set of outside drivers, in combination with two small rollers partially under the toe and heel ends of the stock, or in the other positions under the stock herein designated for them; but I construct some of these skates with more than one set of two outside drivers for one and the same stock, each set to be used by itself, at will, without the other sets, in combination with said wheels under the stock in each or any of the positions designated for them, as aforesaid. To do this, I provide two driving-wheels, A A, for the axle extending across the stock, two less in diameter, as shown in the dotted circle X, for the axle through the sides of the stock, and two still less in diameter, as shown in the dotted circle Z, for the axle through the central axle-holder under the stock. Thus, it is seen, that while provision is made for additional support at the ends, as set forth, the skater can

avail himself of the advantages of exercising with different sets of two driving-wheels on one and the same stock, as aforesaid, beginning, for instance, with the two smallest outside drivers, and, after practicing sufficiently with this set, in combination with the rollers under the stock, taking the next set of drivers, and so on.

When several sets of drivers are provided for one stock, a single long axle is sufficient for them all, as only two drivers are used at a time, in combination with said rollers under the stock.

Said small rollers may be provided with an axle for each of their axle-holders or positions. I prefer the two movable axles. I likewise prefer that the bearing-surfaces of the driving-wheels should be lower down than those of the other wheels or rollers, the better for turning, and that the riding may be the more on the outside wheels.

Said combinations, with the rollers partially under the toe and heel, are intended more for beginners and general wheel-skating, the other combinations more as variations for experts and athletes.

When the exercises are to be confined for any considerable time to the skate, the axle of whose drivers are through the sides, or above the stock, such fixtures as are not necessarily required therewith, may, for the time, be laid aside.

The axle of the drivers, when held in place by a small screw through its washer into the stock, is, on the withdrawal of the screw, readily transferred from one axle-hole to another, when wanted for another set of drivers when there is more than one set for one stock.

The stocks or foot-rests, wheels, axles, and other parts may be of any materials, size, or description suitable for wheel-skating, and said wheels and other parts may be fitted to the foot-rest, and fastened on by any convenient means.

What I herein claim for roller-skating purposes is as follows:

1. A skate-stock or foot-rest having one driving-wheel on an outer axle at or near the middle of each side of the stock, and two smaller rollers partially under each end of the stock, substantially as described and shown.

2. A skate-stock or foot-rest having one driving-wheel on an outer axle at or near the middle of each side of the stock, and four smaller rollers, two under each side of the ball, and two partially under the heel of the stock, substantially as described and shown.

3. A skate-stock or foot-rest having one driving-wheel on an outer axle at or near the middle of each side of the stock, and four smaller rollers, two under each side of the front of the heel and two under each side of the front of the ball, substantially as described and shown.

4. A skate-stock or foot-rest having one driving-wheel on an outer axle at or near the

middle of each side of the stock, and one smaller roller under the toe, and two such rollers under the heel of the stock, substantially as described and shown.

5. In a skate-stock or foot-rest having one driving-wheel on an outer axle at or near the middle of each side of the stock, whether in combination with two smaller rollers under each end, or two under the rear and one under the front end of the stock, the outside driving-wheels, arranged so that the upper portions of their peripheries shall extend above the plane of the lower surface of the stock.

6. In each of the several specified combinations covered by the foregoing claims, the

side wheels attached to the stock in such positions that their tread shall be on a plane lower than that of said smaller rollers.

7. A skate-stock or foot-rest provided with axle-holding devices or brackets for supporting the axle of the two outside driving-wheels at different altitudes with respect to the stock, substantially as shown and described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

WASHINGTON PARKER GREGG.

Witnesses:

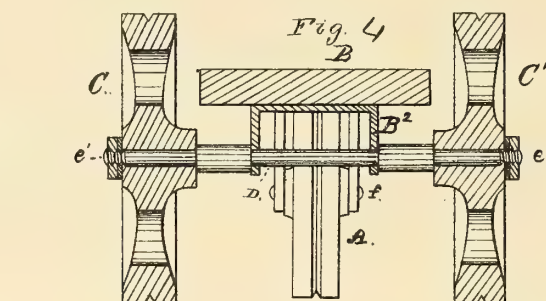
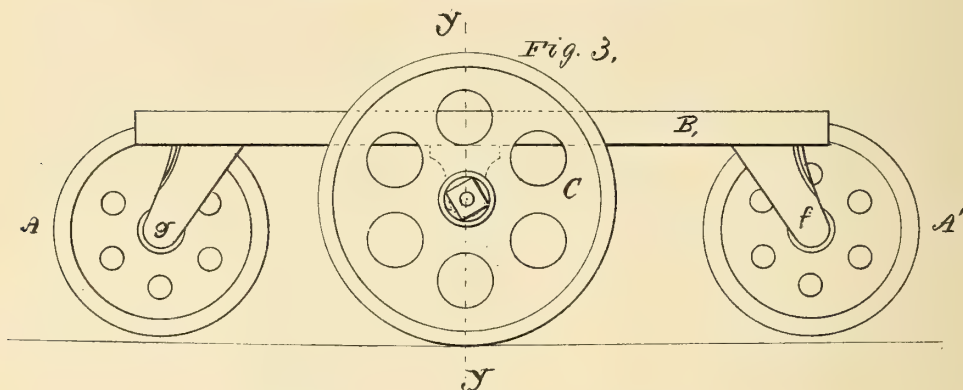
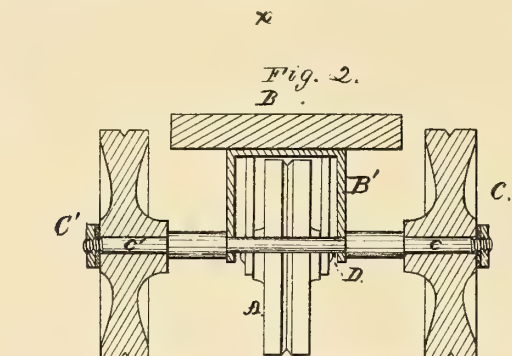
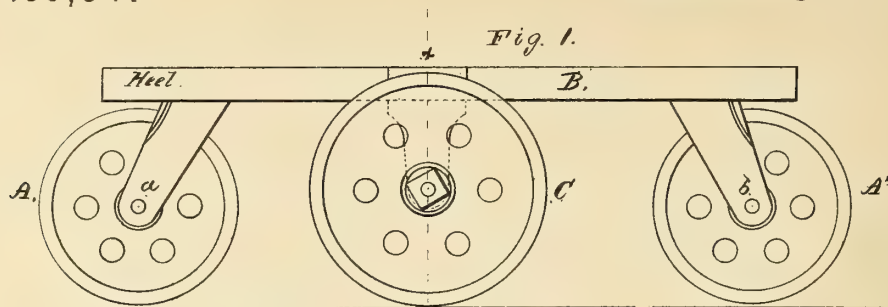
F. P. HALE,

JOHN R. BAKER.

W. P. GREGG.
Roller-Skates.

No. 153,947.

Patented Aug. 11, 1874.



Witnesses.
Wm R. Stansbury
W. P. Deew

W. P. Gregg
By his Attorney
Chas. F. Stansbury

UNITED STATES PATENT OFFICE.

WASHINGTON PARKER GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **153,947**, dated August 11, 1874; application filed March 3, 1874.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

In such drawings, Figure 1 is a side elevation of my improved skate, the peripheries of the side wheels or drivers being below the plane of the upper surface of the foot-rest. Fig. 2 is a transverse vertical section through the line *xx* of Fig. 1. Fig. 3 is a side elevation of another form of my improved skate, the upper parts of the peripheries of the side wheels or drivers being above the level of the plane of the upper surface of the foot-rest. Fig. 4 is a transverse vertical section in line *yy* of Fig. 3.

The same letter marks the same part wherever it occurs.

In a patent granted to me July 25, 1865, reissued December 23, 1873, I secured a skate having side driving-wheels turning on axles projecting laterally from the foot-rest, the upper parts of the peripheries of said driving-wheels extending above the surface of the foot-rest, and said skate being provided with heel and toe supporting rollers, so hung that a horizontal line, tangent to their bearing-surfaces, should be in a plane a little above that of the bearing-surfaces of the driving-wheels.

My present improvement consists in suspending the axle of the side driving-wheels in brackets depending from the lower side of the foot-rest, so that the upper parts of the peripheries of the side driving-wheels may either extend above the plane of the surface of the foot-rest, or be level with, or below it, as may be preferred, by merely altering the depth of the bracket without any necessary alteration of the size of the drivers; the driving-wheels, in all the cases supposed, being outside of the perpendicular face of the sides of the foot-rest, and never underneath said rest, and the heel and toe supporting rollers so hung that the lower part of their peripheries shall be in a

plane a little higher than that of the lower part of the peripheries of the driving-wheels.

The drawings represent this invention in two forms, differing only in the depth of the brackets, the size of the driving-wheels, and the relation of the peripheries of the driving-wheels to the surface of the foot-rest.

In such drawings, Figs. 1 and 2 show the arrangement of the wheels and rollers in accordance with the first form of my invention; and Figs. 3 and 4 the arrangement of the same in accordance with the second form thereof.

The first form of my invention may be said to consist, mainly, in arranging the outside driving-wheels so that the upper part of their peripheries shall be below the plane of the upper surface of the stock. In carrying out this part of my invention, I place two comparatively small rollers, *A A'*, (one partially under the heel,) on an axle, *a*, and the other partially under the toe on an axle, *b*, of the stock or foot-rest *B* for support, and to facilitate turning; and I also arrange two larger wheels, *C C'*, for driving and side support, upon the journals *c c'* of an axle, *d*, suspended in bracket *B'* below the arch of the instep of the stock *B*, so that one of the said driving-wheels shall be at each side of the stock, on a plane outside of the perpendicular face thereof, the peripheries of said driving-wheels being below the plane of the upper surface of the stock.

In the drawings, Figs. 1 and 2, the upper parts of the peripheries of the driving-wheels are shown as extending nearly to the top of the stock, but they may be lower down, if preferred.

By these means is produced an outside wheel-skate which has no axle through its stock, or projecting laterally therefrom, nor any portion of the peripheries of its wheels above the plane of the upper surface of the stock, though the two driving-wheels are outside of the stock, and larger in diameter than the toe and heel rollers. Designed to be compact, and to run easily with speed and safety, its driving-wheels may be of any reasonable size; but, as the peripheries do not reach above the upper surface of the stock, on this and other accounts it is not proposed that they should be equal in diameter to the larger ones, to be used

under the second form of my invention hereinafter mentioned.

This second form may be said to consist, principally, in hanging the journals of the two outside driving-wheels on the bracket B², so that the upper part of their peripheries shall extend above the plane of the upper surface of the stock, and said wheels be, at the same time, used with two smaller rollers, one under the toe, and the other under the heel, of the stock, thereby not only retaining most of the advantages of my said patented invention, but, by reason of dispensing with the axle through the stock, securing others important and peculiar to this second form of my improvements. To accomplish this, instead of using two driving-wheels, with their peripheries below the plane of the upper surface of the stock, as set forth in the first part of this specification, I put upon the journals *ee'* of the axle D, suspended in bracket B² below the arch of the instep of the stock B, two outside driving-wheels, C C', so large in diameter that the upper part of their peripheries will extend above the plane of the upper surface of the stock, said stock having two small rollers, A A', one on an axle, *f*, under the toe, and the other on an axle, *g*, under the heel, to be used with said side wheels.

By these means either low or high journals may be employed, and thus the smallest and largest wheels or rollers suitable for roller-skates be brought into use. In a word, not only can we employ as large outside driving-wheels as can be used to advantage, but larger toe and heel rollers can be used with the driv-

ing-wheels than could be employed in my previous patent without unduly increasing the diameter and weight of such driving-wheels as therein shown, on account of their axles passing through the sides of the stock, thereby enabling different skaters to avail themselves of the differences in these respects, according to their skill, age, strength, the state of the skating-surface, and other circumstances.

In the second, as in the first, form of these improvements, the bearing-surfaces of the driving-wheels are arranged to come down a little lower than those of the toe and heel. So in both, the stocks or foot-rests, wheels, rollers, axles, journals, connections, and other parts may be made of any materials, size, or description consistent with my said improvements and their use for skating purposes, and may be fitted to the foot and fastened in any convenient way or manner.

What I claim is as follows:

A roller-skate having the axles of the side driving-wheels suspended under the arch of the instep in brackets depending from the lower side of the stock or foot-rest, which is provided with heel and toe supporting rollers of smaller diameter than the side driving-wheels, all constructed in the manner and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 28th day of February, 1874.

WASHINGTON PARKER GREGG. [L. s.]

Witnesses:

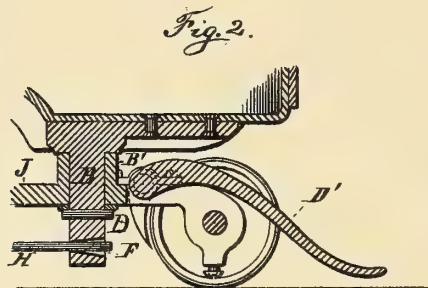
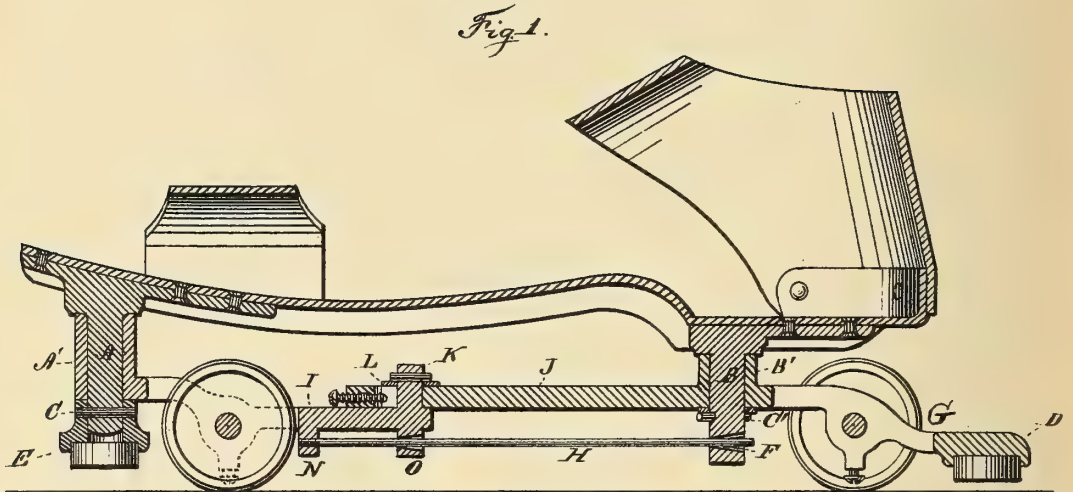
F. P. HALE,

JOHN R. BAKER.

C. W. SALADEE.
PARLOR-SKATES.

No. 177,565.

Patented May 16, 1876.



WITNESSES:

Herm. Lauten.
L. W. Hamilton Johnson

INVENTOR:

C. W. Saladee

UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **177,565**, dated May 16, 1876; application filed May 8, 1876.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of Washington city, in the District of Columbia, have invented certain Improvements in Parlor-Skates, of which the following is a specification:

To enable others skilled in the art to make and use my invention, I herewith submit the following description.

The first part of my invention consists in the combination, in a parlor-skate, of a stop or brake with the coupled roller-frames, as hereinafter more fully described, in such manner that, by a slight elevation of the toe of the skate, the stop in the rear is brought in contact with the floor, thereby preventing the too frequent and serious accidents occurring from a backward fall owing to the rollers running away with the feet when the body is thrown backward.

The second part of my invention consists in the method of applying a brake to the rollers of a parlor-skate, so arranged and operating that the skate may be stopped or its progress retarded at the will of the skater.

The third part of my invention consists in securing to the front end of the skate a stop or "pad," so arranged in relation to the floor as to operate like a "stop," or "rest," to secure a firmer hold upon the floor when in the act of using one skate to propel the other.

The fourth part of my invention consists in combining with the front coupling-bar and rear center-pin of the skate a spring so arranged and operating that it will tend to hold the rollers in a straight line when not directed to run the skate in curves to the right or left.

The fifth part of my invention consists in piercing a conical-shaped hole through the body of the rear center-pin of the skate, below the fastenings, securing it in its socket, having the large diameter of the hole on the rear side of the pin wherein to secure and admit of a free lateral motion of the rear end of the spring.

In the drawings, Figure 1 is a vertical longitudinal section through the center of a complete skate on the plan of my invention.

The arrangement of rollers, coupling-bars, and stock here shown is substantially the

same as that shown and described in another application of mine.

Fig. 2 is a modification of the brake, secured to the rear end of the skate.

A is the front center-pin of the skate. B is the rear center-pin. A' is the socket to receive the front center-pin. B' is the socket to receive the rear center-pin. C C' are the fastenings, holding the center-pins in their sockets. D is the rear projecting stop or "brake," formed by the inflexible prolongation G of the rear coupling-bar J. D' D'' is a modification of the brake-bar and brake. E is the front projecting stop or "pad;" F, conical hole through rear center-pin to receive the end of spring H. H is the spring. I is the front and rear coupling-bars, constructed to carry the rollers; also to turn horizontally on the center-pins; and also to balance the weights, as described in another application of mine. K L is the sliding joint. N O are the studs holding the front end of the spring H to the front coupling-bar.

In Fig. 1 the rear coupling-bar J is extended at G to form the stop or brake D. The bottom of the latter may or may not be provided with a piece of hard rubber, leather, or other suitable material, to prevent wear when in contact with the floor, and to afford a better hold upon the floor or ground when acting as a "brake." To operate the stop or brake, the skater has only to raise the toe of his boot, when the stop D comes in contact with the floor, and the skate is stopped, or its progress retarded, as required.

In the modification of brake seen in Fig. 2, the projecting stop D' is made to serve as a lever to apply the brake D'' to the rollers by the same motion of the skater's boot as that which brings the other brake in contact with the floor.

The front center-pin A is extended to form the stop or pad E, or so as to receive the latter, which is so arranged in relation to the floor that it will serve as a "rest" against which to set the toe of the skate when using it to propel its mate on the other foot, and thus prevent the skate from slipping backward when set in this position for this purpose. This stop may also be provided with a pad of

rubber, leather, or other material. The center-pins A and B are rigidly secured to the under side of the stock, and passed down through the sockets A' and B', where they are secured by a fastening, consisting of a washer and pin, C', the latter passing through the body of the center-pin just outside of the washer. The spring H is secured to the under side of the front coupling-bar in the studs N O, and the rear end is passed into the conical hole F in the rear center-pin B. The purpose of this spring is to keep the coupling-bars on a line with each other when the rollers are relieved from lateral pressure applied to run the skate in curved lines. The cone-shaped hole F admits of the proper movement of that end of the spring when it is sprung in the center to the right or left.

I claim—

1. In a parlor-skate, the combination of the front and rear coupled roller-frames I and J

and the rear brake or stop D, when constructed and arranged to operate substantially as described.

2. The lever D', in combination with the brake D'', substantially as and for the purpose described.

3. In a parlor-skate, the forward-projecting stop or pad E, substantially as and for the purpose herein set forth.

4. In a parlor-skate, the spring H, in combination with the studs N O, and rear center-pin B, substantially as and for the purpose set forth.

5. The center-pin B, having the conical hole F, in combination with the spring H, substantially as and for the purpose set forth.

CYRUS W. SALADEE.

Witnesses:

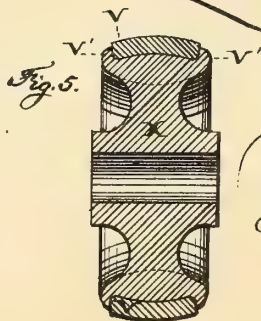
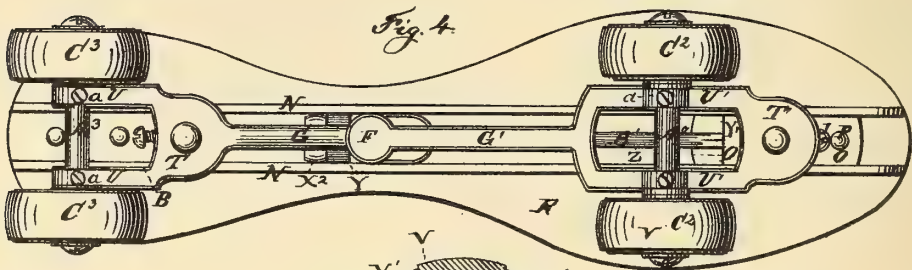
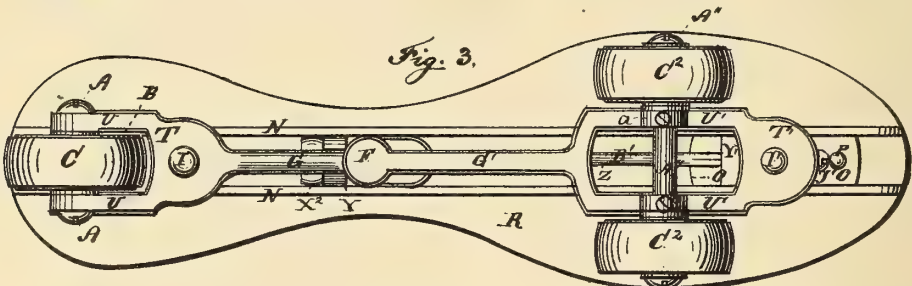
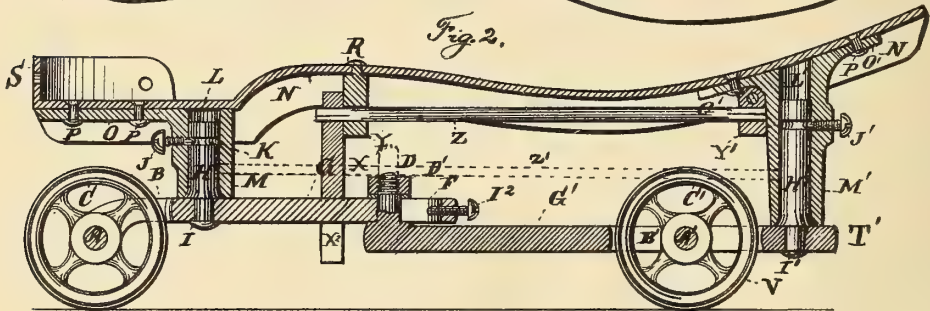
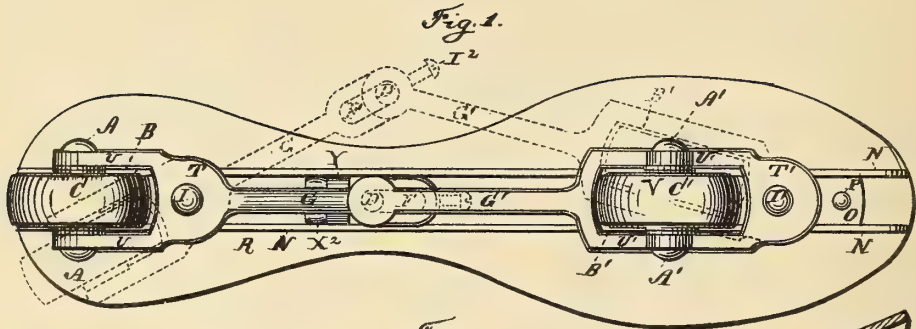
J. W. HAMILTON JOHNSON,
J. A. RUTHERFORD.

C. W. SALADEE.

PARLOR SKATES.

No. 177,566.

Patented May 16, 1876.



WITNESSES :

Herrn. Lauten!
Abby C. Saladee

INVENTOR:

C. W. Saladee

UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **177,566**, dated May 16, 1876; application filed May 2, 1876.

To all whom it may concern :

Be it known that I, CYRUS W. SALADEE, of Washington, in the District of Columbia, have invented certain Improvements in Parlor-Skates, of which the following is a specification :

To enable others skilled in the art to make and use my invention, I herewith submit the following description :

A skate constructed with rollers that cramp, by means of a rocking or canting motion of the stock or foot stand, upon a hinged mechanism interposed between the stock and the axle-bearings of the skate, is no part of my invention. In my invention the pivot-bearings supporting the stock of the skate are secured to the roller-frames or coupling at a suitable distance in advance of the front and rear roller-bearings, said frames being connected and coupled together to form a sliding joint between the front and rear axles. By this arrangement of parts is secured two important objects: first, the weight imposed upon the roller-frames is evenly balanced, and no leverage is exercised upon the said pivot-bearings, which otherwise would sustain the lateral strain which is common to the ordinary castor-wheel pivots; and second, by a lateral horizontal movement of the toe and heel of the skater's boot in opposite directions, the rollers will be adjusted to run the skate in a curved direction to the right or left, as desired. Also, in my invention the roller-carrying frames of the skate are so constructed that the rollers and axles are made detachable, thereby admitting of using the skate with two, three, or four rollers, as circumstances may require; and third, my invention consists in the method of applying a spring to the stock and running-gear, or to the running-gear alone, so as to maintain the rollers in a straight line the instant they are relieved from the strain which compels them to run in curved lines, as will hereinafter more fully appear.

In the drawings, Figure 1 is a bottom-plan view of a two-roller skate on the plan of my invention. Fig. 2 is a vertical longitudinal section of the same through the center. Fig. 3 is a bottom-plan view of a modification, showing three wheels or rollers secured to the same stock. Fig. 4 is a bottom-plan view of a modi-

fication, showing four wheels or rollers secured to the stock; and Fig. 5 is a cross-section of the roller, showing the manner of securing thereto the attachable elastic band or tire V.

The roller-frames and coupling-bars $G\ G'$ are formed with bearings $U\ U'$ for the roller-axles, which bearings are spread apart, forming open spaces to admit the rollers $C\ C'$, when only one roller is used in each frame, as shown in Figs. 1 and 3. The single-roller axles $A\ A^1$ are made removable, and in lieu of them the axles $A^2\ A^3$ for the double rollers $C^2\ C^3$ may be inserted in the bearings $U\ U'$, to which they are secured by set-screws a , or other equivalent means. By this arrangement the skate may be used with two, three, or four rollers, as indicated in the different figures, or as may be desired. Each pair of skates will be provided with eight rollers, and four long and four short axles, $A\ A^1$, so that the beginner may first use four rollers, and afterward reduce them to three and to two as he attains proficiency in the use of the skates. The roller-frame or coupling-bar G' is extended forward to form a bearing, T' , on which to secure the center pin or pivot H' . Immediately in front of the rear roller-bearing is formed the bearing T , on which to secure the rear center pin or pivot H . The inner end of the roller-frame or coupling-bar G' has a stud, D , formed on the upper side, and the rear bar G has its inner end formed with an oblong slot fitting over the stud D , and in which the latter is permitted to slide, to admit of the position seen in dotted lines in Fig. 1. To regulate the travel of the stud D in its slot F , and thereby limit the lateral motion of the coupling-bar joint, a set-screw, I^2 , is passed into the end of the bar G , reaching through and into the slot F . The stock or foot-stand R is of the usual make and form. To the front end is secured a socket, M' , Fig. 2, which fits over the center pin or pivot H' . To the rear end of the stock is secured a socket, M , which is in like manner fitted over the center pin or pivot H . These connections are secured by the set-screws J and J' , the points of which fit into corresponding grooves in the center-pins. The stud D is held in the slot F , and the coupling-bars joined together either by means of a screw-nut or by a pin driven through its body. For the pur-

pose of keeping the coupling-bars on a line with each other, and to force them back to that position from the one seen in dotted lines in Fig. 1, when the rollers are relieved from the strain directing and holding them in a curved line, or when lifting the skate clear of the floor, a torsional spring, Z, is employed, having the one end rigidly fixed to the front end of the stock at O' Y', Fig. 2, while the opposite end is passed loosely through the bearing Y, and secured to the swinging standard X². The lower end of the standard X² is forked, one prong extending down on each side of the main body of the rear coupling-bar G. Thus, as the coupling is moved to the right or left, the swinging standard operates to twist the spring Z, the resistance to which will tend to return the coupling-bars to a straight line central to the skate.

In Fig. 2 is shown a modification of a spring that may be substituted for the one hereinbefore described, and answer the same purpose. It is represented by the dotted lines Z'. In this modification a flat or round strip of steel is passed through the stud D of the coupling-bar G', and the opposite ends of the spring are loosely passed into the body of the socket M and M'. Thus arranged, the straight strip of steel will be bent as the stud D is moved laterally to the right or left, and, having a bearing at each end, as shown, will tend to keep the coupling-bars in a line with each other. With the application of the usual fastenings to secure the boot of the skater in position on the stock, the skate is complete.

To turn the skate the toe of the boot is turned in the direction required, and the heel in the opposite direction, when, by reason of the weight being imposed upon the center pins or pivots H H', which pins are in advance of the bearing of the rollers on the floor, like the

ordinary caster-wheels, the coupling-bars G G' will instantly yield to such horizontal lateral pressure, and take the position indicated by the dotted lines, Fig. 1. The roller-axes will thus be in a position radial to the curve, and the skate will turn to the right or left, as desired. Another important office of the coupling-bars is to prevent the leverage which is exerted on the pivots in the ordinary caster-wheels. Their construction is such as to balance the weight carried by the center-pin or pivot-bearings T T', for these points being an equal distance in advance of the front and rear roller-bearings on the floor, the tendency of the rear end of the coupling-bar G' is upward, while the tendency of the front end of the rear coupling-bar G is downward. By uniting the bars at their point of meeting, these two pressures are counteracted, and the center pins or pivots H H' are relieved of that lateral strain they otherwise would have to sustain.

I claim—

1. In a parlor-skate, the roller-frames G G', in combination with the coupling D F, axle-bearings U U', and pivots H H', the whole constructed and arranged to operate substantially as and for the purpose described.

2. In a parlor-skate, the roller-frames G G', having the axle-bearings U U', in combination with the detachable axles, all constructed and arranged to operate substantially as and for the purpose set forth.

3. In a parlor-skate, the torsional spring Z or spring Z', in combination with the stock R and coupling-bars G G', substantially as and for the purpose set forth.

CYRUS W. SALADEE.

Witnesses:

ABBY C. SALADEE,
STELLA J. CHAMBERS.

C. W. SALADEE.
PARLOR-SKATES.

No. 7,345.

Reissued Oct. 10, 1876.

Fig. 1.

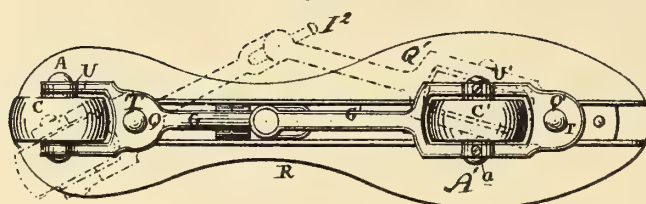


Fig. 2.

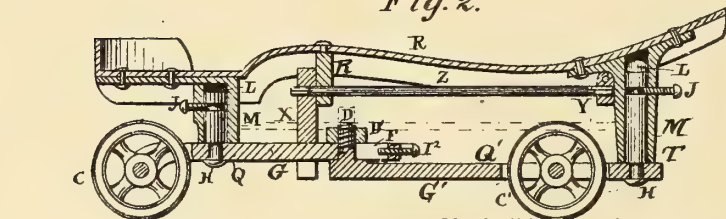


Fig. 3.

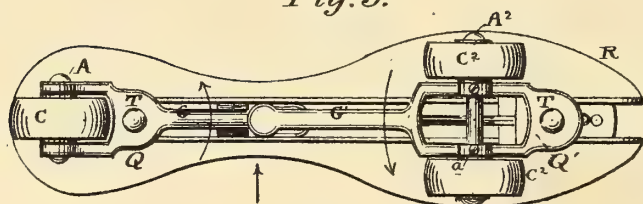


Fig. 4.

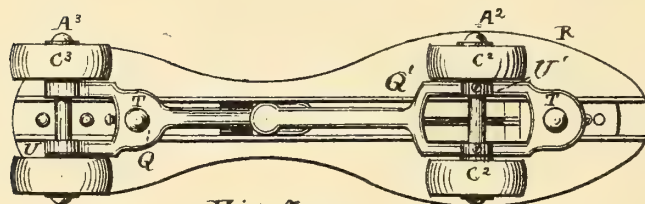
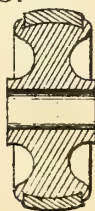


Fig. 5.



Attest:
Fred Benjamin
Courtney A. Cooper.

Cyrus W. Saladee
By his atty.
Charles Foster

UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. 177,666, dated May 16, 1876; reissue No. 7,345, dated October 10, 1876; application filed August 10, 1876.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of Washington, District of Columbia, have invented an Improved Parlor-Skate, of which the following is a specification:

My invention consists of a parlor-skate in which the stock is supported front and rear by rollers so hinged to the stock that they will follow the movements of the latter, accommodate themselves to the course it may take, supporting it in any position, but without interfering with or in any manner controlling or affecting its movements.

My invention consists, further, in connecting the roller-frames, so that the lateral and vertical pressure upon each shall be counterbalanced and neutralized by the like pressure on the other; also, in applying a spring to prevent the too free or extended movement of either roller-frame, and in constructing the latter so that one or more rollers may be used in each frame.

In the drawings, Figure 1 is a bottom plan view of a two-roller skate on the plan of my invention. Fig. 2 is a vertical longitudinal section of the same through the center. Fig. 3 is a bottom plan view, showing three wheels or rollers secured to the same stock. Fig. 4 is a bottom plan view, showing four wheels or rollers secured to the stock; and Fig. 5 is a cross-section of the roller, showing the manner of securing thereto the attachable elastic band or tire.

The roller-frames Q Q' are arranged below a stock, R, and are provided with ordinary fastenings, are formed with bearings U U' for the roller-axes, which bearings are constructed to each admit one or more rollers, C C', one roller being shown in Figs. 1 and 3. The single-roller axes A A' are made removable, and in lieu of them longer axes A² A³ for the double rollers C² C³ may be inserted in the bearings U U', to which they are secured by set-screws a, or by other equivalent means. By this arrangement the skate may be used with one, two, or three rollers at each end, as indicated in the different figures, or as may be desired. Each roller-frame is pivoted in front of the axle and on a line with, or but slightly above, the axle-bearings, to a stud, M, each stud having a socket, L, for a pin or pivot, H,

which is connected at the point T to the roller-frame, a screw, J, extending into an annular groove in the pin, which can thus turn, but cannot be withdrawn. As thus applied to the stock, the rollers act precisely as ordinary casters—simply following the stock, self-accommodating to its various movements, which are just as free as, and no more affected by the rollers or supports than those of the stock in an ice-skate. Thus the ordinary natural motion of the foot, pointing it in the direction which it is desired to take, is sufficient to change the course from a straight to a curved direction, or vice versa.

While this is the principle of the movement in my improved skate, the simple application of casters to the opposite ends is not sufficient to make a practicable skate, as the sidewise thrust of the stock in skating would cause casters arranged as usual to turn and permit a direct lateral movement of the skate. To prevent this I combine with the roller-frames a spring, so arranged as to permit a limited oscillating movement of the frames to either side, and to tend to restore each to a position in a line with the other when the skate is moved in a right line or raised from the floor.

In the drawing, the spring Z, secured at one end to a stud, Y, passes freely through a stud, R, and carries at the other end an arm, X, forked to receive an arm, G, extending from the frame Q and jointed to a similar arm, G', extending from the frame Q'. Any oscillation of the frames will vibrate the arm X and twist the spring Z, the torsional action of which will restore the frames to a central position. But other means of arranging the spring to produce the same effect may be adopted.

It will be noted that the arm G' is provided with a pin, D, extending through a slot, F, in the arm G, and carrying a nut, D', and that the arm G overlaps the other. Several important results follow from this arrangement:

First, while the caster-like movement of each wheel is not altered, yet it is caused to facilitate the like movement of the other wheel and preserve a unison of operation.

Second, it permits the oscillating movements to be positively and adjustably regulated by means of a set-screw, I², limiting the play of

the pin D in the slot F, thus bringing the frames to positive bearings when the stock is turned vigorously under too heavy a pressure to be resisted by the spring.

Third, it relieves all strains upon the pivots, such as they are subjected to in ordinary casters, by making the vertical pressures counteract and neutralize each other. Thus the tendency of the rear end of the frame G' being to rise, and the front end of the frame G to descend, each arm G G' bears upon the other and counterbalances the pressure on the same.

Fourth, it prevents any movement of the frames under the sidewise thrust of the skate. If the frames were independent of each other a direct push upon the stock in the line of the arrow, Fig. 3, would tend to turn the roller-frames in the directions shown by the arrows. By connecting the frames the pressure on one is counterbalanced by that on the other, and the lateral pressure upon the stock has no effect in carrying the movable frames out of line with each other; thus, when the skater's body is inclined and the thrust is in a direction across the skate, there is no tendency to disturb the positions of the rollers, and no strains that interfere in the least with the perfect freedom of action in accommodating themselves, caster-like, to the movements of the stock as it is pointed and carried, first in one direction and then in another.

I claim as my invention—

1. A parlor-skate supported by rollers at the front and rear, having caster-like attachments and movements, and arranged to operate

substantially as set forth, for the purpose specified.

2. A parlor-skate supported at each end by a roller or rollers, capable of a limited caster-movement round a pivot in front of the axle, and retracted by a spring, substantially as and for the purpose set forth.

3. A parlor-skate in which the foot-stock, supported by front and rear caster-rollers, has its bearing at each end upon a roller-frame in front of the roller-axle, substantially as and for the purpose set forth.

4. A roller-skate in which the stock has its bearings upon the roller-frames, and one of the latter bears upon and counterbalances the other, substantially as and for the purpose set forth.

5. The combination, in a parlor-skate, of roller frames and axles, constructed substantially as described, to support a single roller at the center or two rollers on opposite sides of the center, substantially as and for the purpose specified.

6. In a parlor-skate, the roller-frames Q Q', spring Z, axle-bearings U U', and pivots H H', the whole constructed and arranged to operate substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS W. SALADEE.

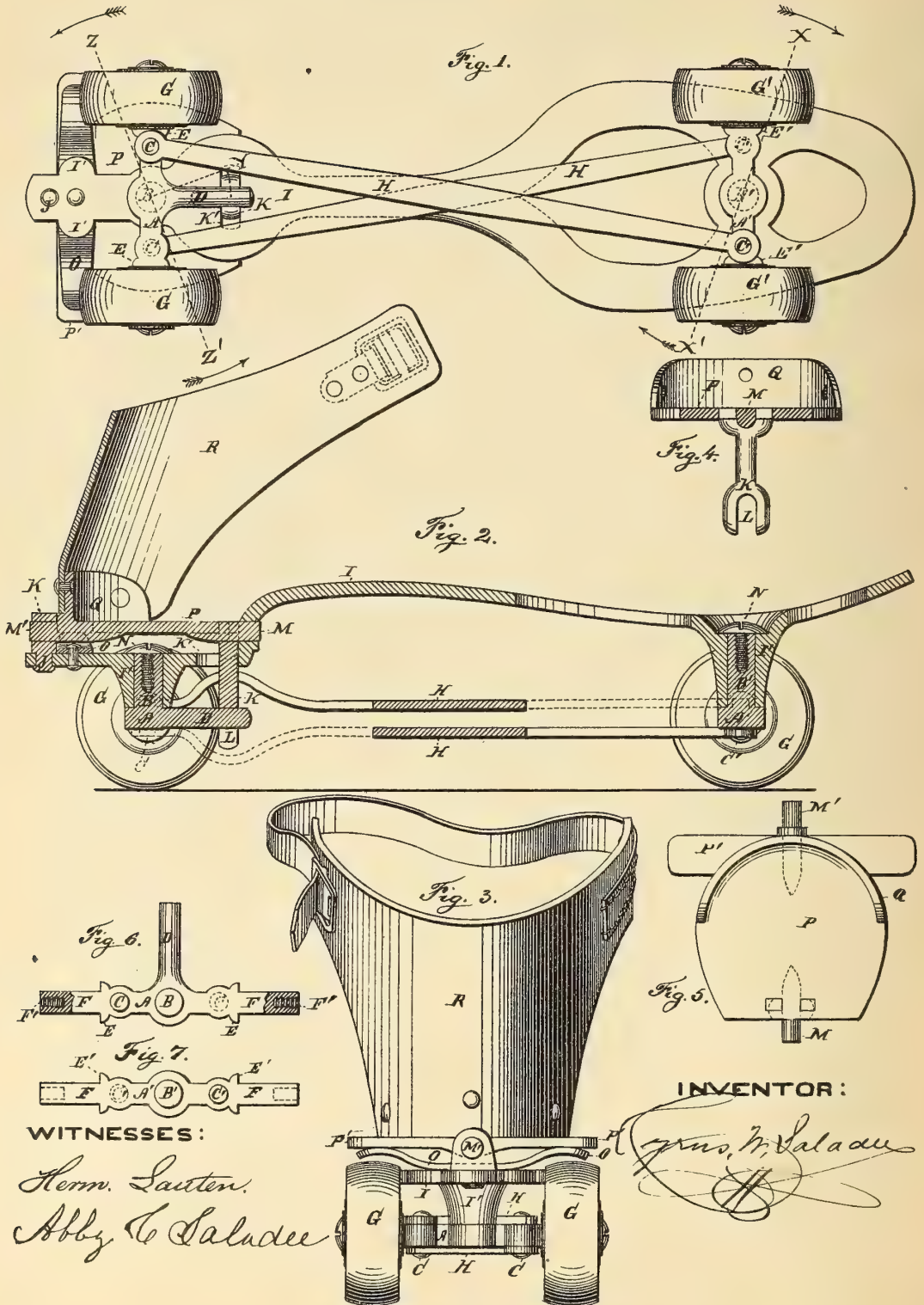
Witnesses:

CHARLES E. FOSTER,
COURTNEY A. COOPER.

C. W. SALADEE.
PARLOR-SKATES.

No. 177,567

Patented May 16, 1876.



UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **177,567**, dated May 16, 1876; application filed April 28, 1876.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of Washington city, in the District of Columbia, have invented certain Improvements in Parlor-Skates, of which the following is a specification:

To enable others skilled in the art to make and use my invention, I herewith submit the following description:

A skate constructed with rollers that cramp, by attaching or applying the same to the stock or foot-stand in such manner that said rollers will be "turned," "cramped," or "adjusted" so as to run the skate in a curved line to the right or left, by turning, rocking, canting, or oscillating the stock or foot-stand upon a jointed intermediate mechanism connecting the stock to the running-gear of the skate, is no part of my invention.

My invention consists, first, in the attachment of a heel-support pivoted to the stock or foot-stand of a parlor-skate, and otherwise suitably connected to the axle or gearing below, in such manner that a rocking or oscillating motion is imparted to the heel-support by a slight pressure of the heel of the skater's boot to one side or the other, thereby directing the rollers to run the skate in curved lines to the right or left, while the stock or foot-stand remains in its fixed lateral or horizontal position parallel with the floor; also, securing to the rear axle a steering-bar, which is acted upon by a swinging standard suspended from the overlying heel-support, by which the rocking motion imparted to the latter causes the axle to be turned upon its center-pin and the skate directed in curved lines to the right or left, as already described; also, applying to the oscillating heel-support the requisite fastening to secure the heel of the boot thereon, thereby leaving the instep of the foot free to move laterally on either side of the center line of the stock or foot-stand when running the skate in curved lines.

In the drawings, Figure 1 is a bottom-plan view of a skate embodying my invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a rear view. Fig. 4 is a detached front view of the oscillating heel-support. Fig. 5 is a top view of the same. Fig. 6 is a detached top view of the rear axle and steering-

bar combined, and Fig. 7 is a detached top view of the front axle.

In this skate I construct the stock or foot-stand I and the sockets I' by casting the same in one piece of metal, the top of the foot-stand being pierced and made skeleton in shape. The front axle A' has its center-pin B' formed upon its upper surface, which pin is fitted to operate in its corresponding socket formed upon the bottom of the foot-stand. The front rollers G' are secured upon the axle-spindles F. The rear axle A has, in like manner, its center-pin B formed upon its upper surface, with the steering-bar D secured to the front side, in a position at right angles to the center-pin. The center-pin is secured in its corresponding socket I', as clearly shown in Fig. 2. The oscillating heel-support P has a narrow rim, Q, raised upon its rear edge the better to support the heel of the boot, and also as a means to secure the leather fastening R, for the support of the heel and instep of the foot. To the front edge of the heel-support P is secured the swinging standard K, the lower end of which is forked. The prongs of this fork pass down over the steering-bar D, as seen in Figs. 1 and 2; or the swinging standard K may be shaped like D, and work in a slot formed in the steering-bar D. The heel-support P is pivoted to the stock I at M and M'. The leather fastening R is riveted to the outside of the raised rim Q. The front and rear axles are connected by the diagonally-arranged equalizing-bars H and H'.

Supposing the skate to be in position on the foot of the skater, its operation is as follows, viz: The stock I and the front part of the foot remain in their fixed lateral or horizontal position, parallel with the floor, while the heel, by a slight pressure, on one side or the other, upon the heel-support P, will depress that side, and thus produce a rocking or oscillating motion on its pivoted centers M M'. By such motion the lower end of the swinging standard K will be swung in the opposite direction, carrying with it the front end of the steering-bar D, thereby throwing the hind axle into the position shown by the dotted line Z Z'. In taking this position a corresponding motion is instantly transmitted to the front axle through the diagonally-arranged bars H H'.

The axles of the rollers thus take a position radial to the curve which it is desired the skate should take.

I do not here claim the diagonal bars H and H', they forming the subject of another pending application of mine.

I have described the stock or foot-stand I as being cast, and as having the sockets I' formed thereupon as part of the same. But with a view of making the complete skate as light as possible, the stock may, by appropriate dies and drops, be punched out and struck up of sheet metal, and the sockets I' riveted thereto, as shown and described in another application of mine; and, if preferred, the usual wood stock may be used, and the heel-support hinged thereto by piercing a slot through it at the point where the swing-standard K passes down to connect with the steering-bar, and which will answer the purpose in the cheaper class of skates I intend manufacturing.

I claim—

1. In a parlor-skate, the rocking heel-plate P, in combination with the swinging axle A, and mechanism by which the oscillation of said heel-plate will turn said axle, substantially as and for the purpose set forth.

2. In a parlor-skate, the steering-bar D, in combination with the rear axle, the swinging standard K, and the oscillating heel-support P, substantially as and for the purpose herein set forth.

3. In a parlor-skate, the oscillating heel-support P, in combination with a suitable fastening to secure it to the foot, substantially as herein set forth.

CYRUS W. SALADEE.

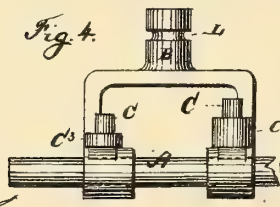
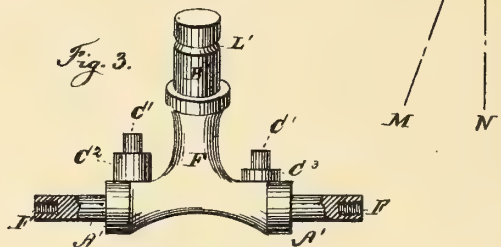
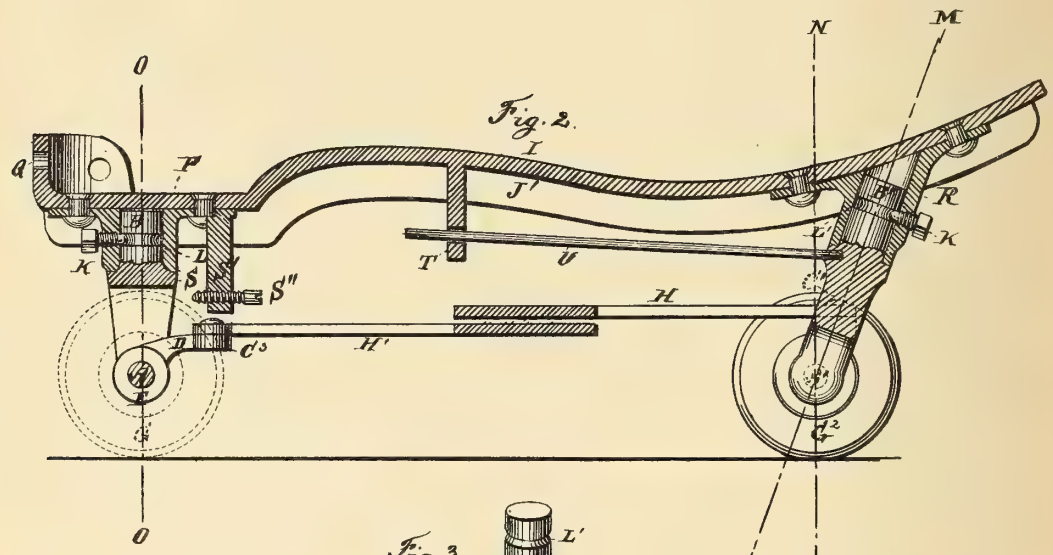
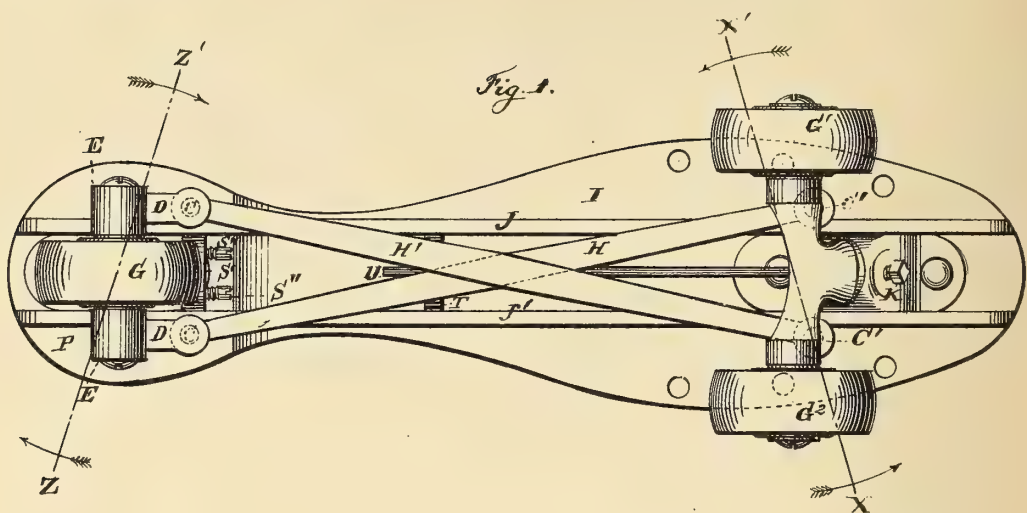
Witnesses:

J. A. RUTHERFORD,
J. WEST WAGNER.

C. W. SALADEE.
 PARLOR SKATES.

No. 177,568.

Patented May 16. 1876.



WITNESSES:

Horn. Lauten
Abby C. Saladee

INVENTOR:

Cyrus W. Saladee

UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **177,568**, dated May 16, 1876; application filed May 2, 1876.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of Washington city, in the District of Columbia, have invented certain Improvements in Parlor-Skates, of which the following is a specification:

To enable others skilled in the art to make and use my invention, I herewith submit the following description:

I am aware that attaching rollers to the stock or foot-stand of a parlor-skate in such a manner that they will be "turned," "cramped," or "adjusted" so as to run the skate in a curved line to the right or left, by tipping or cauting the stock or foot-stand upon a hinged intermediate mechanism interposed between the stock and the axles of the skate, is old and well known, and that is no part of my invention.

I seek in this invention to prevent the rocking or oscillating motion of the stock or foot-stand, and retain it in its horizontal position, in such manner that the greater pressure of the foot on one side or the other of the stock, together with the forward motion of the skate, will adjust the rollers and direct the skate in a curved line to the right or left, as desired.

My invention consists in the employment, in a parlor-skate, of two diagonal bars to connect the front and rear rollers, to compel a unity of action between their axles when the skate is describing a curve, causing them both to assume a position radial to the curve; also, in connecting the center bearing and pin of the rear axle to the stock of the skate in a perpendicular position, while the pivot of the front axle is secured to the stock in a slightly-inclined position, which will bring the axle-bearings of the latter in the rear of the center bearing, while the rear and front axles are connected by the before-mentioned diagonal bars, whereby a unity of action between the rollers is secured when the skate is describing curves to the right or left; also, in the employment of a "stop," connected to the under side of the stock, and provided with set-screws to regulate the degree of curvature the skate is required to take.

In the drawings, Figure 1 is a bottom-plan view of a skate according to my invention. Fig. 2 is a longitudinal vertical section through

its center. Fig. 3 is a detached view of the front axle, showing the center-pin and the bearings for the front ends of the equalizing-bars; and Fig. 4 is a detached view of the yoke, in which is secured and operated the carrier-roller under the heel of the stock, with its center-pin and bearings for the equalizing-bars.

The stock I is made of wood or metal, in the usual way. To the front end is secured the socket R, which receives the center-pin B' of the front axle. The connection is retained by means of the screw K working in the groove L' in the center-pin. This socket and center-pin are inclined in relation to the stock, as shown by the dotted line M M, thus bringing the axles of the guide-rollers G¹ and G² slightly in the rear of the center bearing B', as indicated by the dotted line N N. The carrier-roller G is secured to the rear end of the stock by means of the socket S and center-pin B, in a manner similar to the front socket and center-pin; but the center-pin B is on a line, O O, perpendicular to the stock. Combined with the socket and yoke of the carrier-roller is the stop S¹, having set-screws S², whereby the degree of curvature in which the skate is to run is regulated. The yoke in the rear and the axle in front are provided with bearings C² C³, having pins or screws C C¹, on which are secured and operated the ends of the bars H and H', connecting the front and rear axles, as shown. The stock I is provided with the usual fastenings to secure it to the boot of the skater.

In the use of this skate the following conditions will be observed, wherein is found not only its novelty, but also its superior advantages over all others having in view the adjustment of the rollers to direct the course of the skate: The single carrier-roller in the rear serves as a center on which to turn and direct the skate, while, at the same time, it sustains the burden imposed on that end. The guide-rollers having their bearings on the floor at an equal distance to the right and left from the center bearing B', and being connected to the yoke of the carrier-roller in the rear by the diagonally-arranged bars H and H', it will be observed that the greater pressure of the foot on the one side or the other of the stock I will impose a correspondingly greater weight upon the guide-roller on that side. The roller

sustaining the greater pressure or weight will, by the forward motion of the skate, be retarded in its progress, the floor acting as a "brake" upon the burdened roller. If, for instance, the greater weight is thrown upon the roller G^1 , that roller will be retarded, and the axle will take the position indicated in the dotted line $X X'$. At the same instant, through the medium of the diagonal bars $H H'$, the axle of the carrier-roller G will take the position indicated by the dotted line $Z Z'$, when it is obvious that the skate will be directed in a curve, the axles of the wheels assuming a direction radial thereto.

To direct the skate in a straight line the pressure of the foot is maintained in the center of the stock. To direct it in a curve toward the right or the left the pressure is thrown on that side of the stock. In no case is there an unsteady or uncertain "rocking" or "tipping" motion, as is the case in all parlor-skates which are constructed to adjust

their rollers by the interposition of a hinged mechanism operated by the oscillating, rocking, or tipping motion of the stock.

I claim—

1. In a parlor-skate, the diagonally-arranged bars H and H' , in combination with the front and rear axles and rollers, substantially as and for the purpose herein set forth.

2. In a parlor-skate, the rear wheel G , having the vertical center-pin B , in combination with the front wheels $G^1 G^2$, having the inclined center-pin B' and the diagonally-arranged equalizing-bars $H H'$, substantially as and for the purpose herein set forth.

3. In a parlor-skate, the stop S^1 , provided with set-screws S^2 , in the manner and for the purpose substantially as shown and described.

CYRUS W. SALADEE.

Witnesses :

STELLA J. CHAMBERS,
ABBY C. SALADEE.

C. W. SALADEE.
PARLOR-SKATES.

No. 180,646.

Patented Aug. 1, 1876.

Fig. 1.

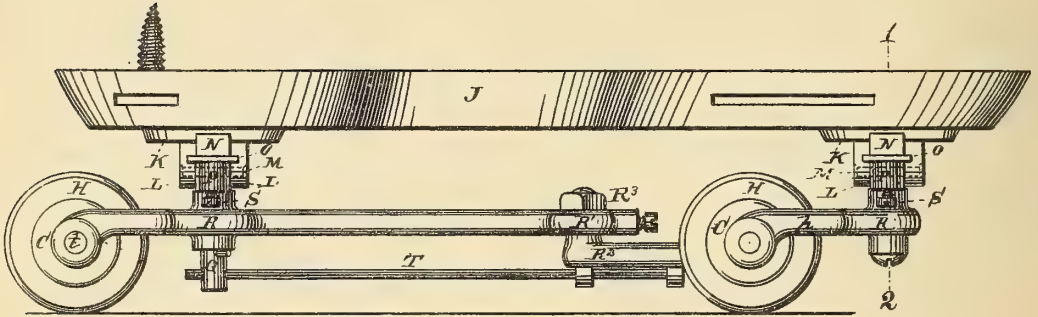


Fig. 2.

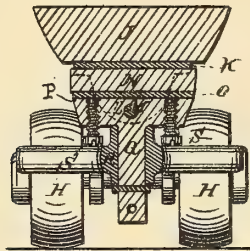


Fig. 3.

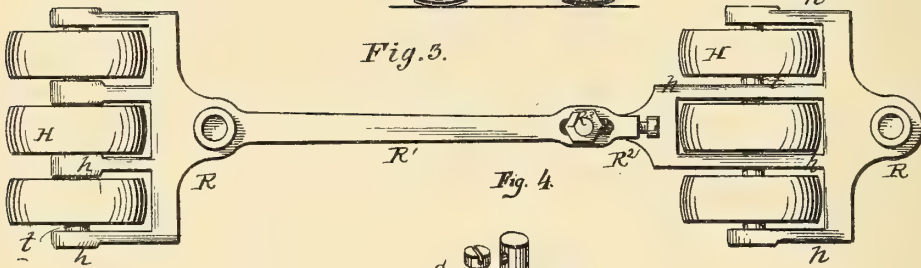
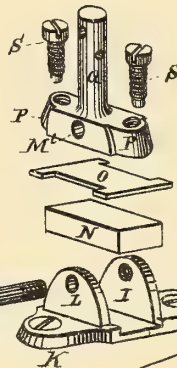


Fig. 4.



WITNESSES:

Herrn. Lauten.
Abby C. Salasce

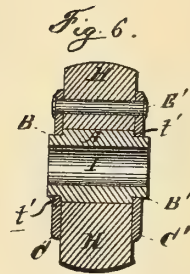
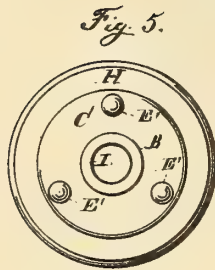
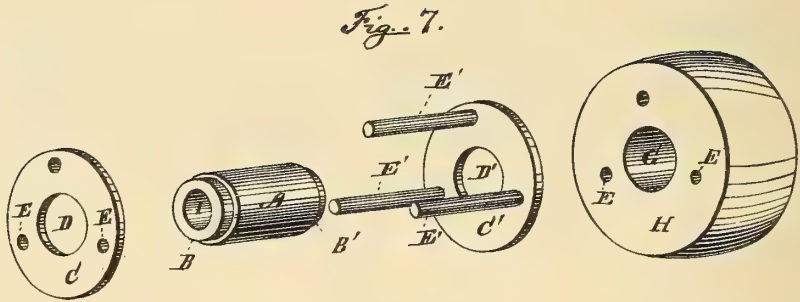
INVENTOR:

Ernest H. Saldaña

C. W. SALADEE.
PARLOR-SKATES.

No. 180,646.

Patented Aug. 1, 1876.



WITNESSES:

Herm. Lauten.
Otto Heidemann.

INVENTOR:

C. W. Saladee

UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **180,616**, dated August 1, 1876; application filed June 14, 1876.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of Washington city, in the District of Columbia, have invented certain Improvements in Parlor-Skates, of which the following is a specification.

To enable others skilled in the art to make and use my invention, I herewith submit the following general description.

The object of my invention is a parlor-skate constructed as fully described hereafter, to facilitate its manufacture and impart greater efficiency.

In the drawings, Figure 1 is a side elevation of my improved skate; Fig. 2, a transverse section on the line 1 2, Fig. 1; Fig. 3, a plan view, the foot-plate and connections being removed; Fig. 4, a detached inverted view, showing the devices employed in connecting the rollers and foot-plate; Fig. 5, a side view of one of the rollers; Fig. 6, a sectional view of the roller; and Fig. 7, a view showing the different parts of the roller, detached.

The foot rest or plate J is supported by two sets of rollers, H H, each turning on the axle of a frame or roller-carrier, R, which vibrates on the vertical stud Q of the roller-bearing plate or block P. Each frame is provided with a series of arms, *h*, with intervening spaces for the reception of one, two, or more rollers, which may be withdrawn and replaced, to give any desired bearing, as in the skate described in my Patent No. 177,566, dated May 16, 1876. The arms *h* support the axle on both sides of each roller, thus preventing the bending or breaking of the axle, and avoiding the use of axles of different length, as required by the arrangement described in my aforesaid patent.

An arm, R², of the forward frame is loosely connected by a pin, R³, to the arm R¹ of the rear frame; and a spring-bar, T, extends through the rear stud Q, through the pin R³, and through lugs on the arm R².

The parts above described operate substantially in the same manner as those in the skates heretofore patented by me—that is, the lateral-pointing movement of the foot-plate causes the frames and rollers to accommodate themselves to the position assumed by the said plate, so

that whatever may be the direction to which the wearer points his foot, the rollers will always move in the same line and afford a sure support.

While the skate is thus guided by the natural lateral movement of the foot on a horizontal plane, it is desirable to permit the foot-piece J to be tilted sidewise, as many skaters prefer to maintain the sole of the foot at nearly a right angle to the lower portion of the leg. Therefore, instead of connecting the foot directly and immovably to the roller-bearings P, as heretofore, I so connect the foot-piece that it may have a limited tilting motion. One mode of making this connection is to provide the foot-piece J, at the under side, with lugs L L, arranged in pairs, to receive between them the roller-bearing P, screw-pins M passing from front to rear through the lugs and through the bearings, and connecting the foot-piece to the latter, without interfering with its tilting movement to either side.

As thus connected, the foot-piece may be inclined to any required angle without interfering with the horizontal position of the frames or roller-bearings, so that the rollers may assume angles caused by changes in the direction of the skate without being affected by the inclined position of the foot-piece.

In order to prevent a too extended and too free tilting movement of the foot-piece, I introduce between the bearing plates P and the foot-piece springs or blocks N, of rubber or other compressible material; and to regulate the tension of this elastic medium, and, consequently, the play of the foot-plate, I employ set-screws S S, by which the material may be compressed between the foot-piece and a follower-plate, O, interposed between the lower face of the material and the ends of the screws.

It will be apparent that other modes of making the connection may be adopted—for instance, by means of ball-and-socket joints, surrounded by rubber rings, in place of the blocks N.

It will also be seen that the adjustable foot-plate may be connected to the frames of the ordinary skates having wheels capable of a rotary motion only, an elastic medium being introduced, to act as described, that the lugs

L L may be secured to a plate, K, adapted to be connected to the foot-plate, and that by withdrawing the pins M the foot-piece may be readily detached.

While I have described the frames R as vibrating on the studs of immovable plates or blocks P, it will be apparent that where a ball-and-socket or other suitable joint is used each plate P may form part of the frame R, which has solely a vibrating motion independent of the tilting movement of the foot-plate.

Although the ordinary rollers may be employed, I prefer the construction shown in the drawing, in which H is a circular block of rubber, paper, felt, wood, or other suitable material, having a central hole, G, for the reception of a metal sleeve or bushing, I, and provided at the sides with annular plates C C', claspings the block, bearing against shoulders *t' t'* of the bushing, and confined thereto by rivets E', thus strengthening the block, and facilitating the repair of the bearing when worn.

I claim—

1. The combination, in a skate, of horizontally-swiveling rollers and a foot-piece, having an independent tilting movement above said

rollers, substantially as and for the purpose set forth.

2. The combination, in a parlor-skate, of a tilting foot-piece, pivoted to fixed bearings P, an elastic medium arranged to limit the tilting motion, and devices for regulating the tension of said medium, substantially as set forth.

3. The combination of the tilting foot-piece, pivoted to the roller-supports, the elastic material N, and screws S S, substantially as and for the purpose set forth.

4. The frame R, constructed as described, with a socket for the vertical stud Q at one end, and with arms projecting horizontally in the opposite direction, having bearings at their ends for the detachable roller-axle, as set forth.

5. The roller consisting of the circular block H, bushing I, having shoulders *t' t'*, and plates C C', confined to the block and to said shoulders by rivets, substantially as specified.

In testimony that I claim the above I hereunto subscribe my name.

CYRUS W. SALADEE.

Witnesses:

GEORGE THOM,
COURTNEY A. COOPER.

C. W. SALADEE.
ROLLER SKATES.

No. 181,868.

Patented Sept. 5, 1876.

Fig. 1.

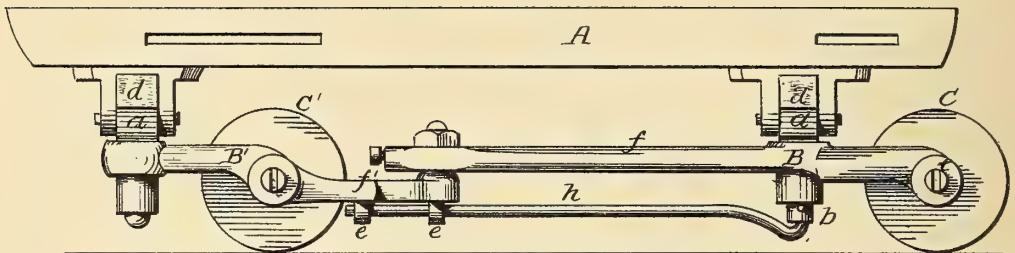


Fig. 2.

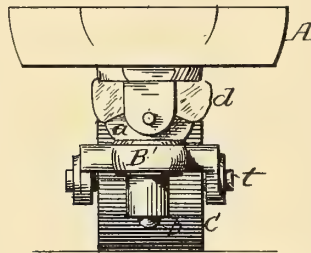


Fig. 3.

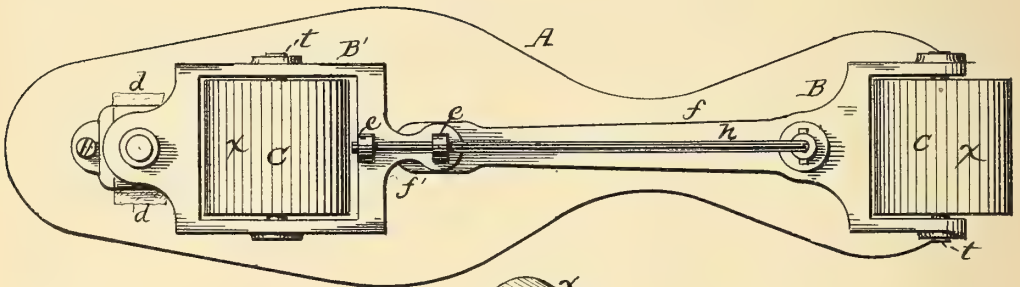
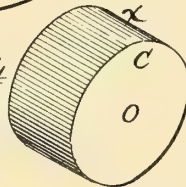


Fig. 4.



Attest:

Courtney A. Cooper
Courtney A. Cooper

Cyrus W. Saladee
By his atty
Charles V. Foster

UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **181,868**, dated September 5, 1876; application filed July 13, 1876.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of Washington, District of Columbia, have invented an Improved Parlor-Skate, of which the following is the specification:

The object of my invention is a parlor-skate, constructed, as fully described hereafter, to afford a steady bearing, reduce weight and friction, and insure greater durability and increased efficiency.

In the drawing, Figure 1 is a side elevation of a parlor-skate embodying my improvements; Fig. 2, an end view; Fig. 3, an inverted plan; and Fig. 4, a perspective view, showing one of the rollers.

A is the foot-piece, which is pivoted in any suitable manner to blocks *a a*, provided with studs or pivots *b*, on which vibrate frames B B', carrying the rollers C C. Blocks *d*, of rubber or elastic material, intervene between the foot-piece and the blocks *a*, limit the rocking movement of the foot-piece, and tend to maintain it in a horizontal position. The foot-piece may be pivoted directly to the roller-frames, or the blocks *a* may be parts of a continuous frame, parallel with the foot-piece. Inwardly-projecting arms *f f'* of the frame B B' are connected by a pin extending from the arm *f'* through a slot of the arm *f*, and a spring, *h*, passing through the lugs *e e* on the frame. B is connected at the opposite end to the stud *b*, on which the frame B vibrates.

As the parts above described are similar in their operation to the similar parts of the skates heretofore patented by me, and especially of the skate for which application for Letters Patent was filed June 14, 1876, it will not be needful to describe their general features more fully. I will, therefore, proceed to point out the special features which constitute my improvements.

In the aforesaid skate the foot-piece was combined with frames, each adapted to carry one, two, or more rollers, and at least two rollers being absolutely needed when the tilting foot-piece was employed, as the rollers were so narrow that they would not afford a horizontal support for the frames when the foot-piece was tilted, but would also be inclined, and prevent the proper operation of the skate. By the use of two rollers, side by side on each

frame, this defect was remedied; but it was necessary to use heavy frames, and the limited width of the separate bearings prevented the use of vitreous rollers. I effectually obviate all these objections by constructing each frame supporting the bearings of a single roller, C, of such a width, approximating its diameter, that either roller will of itself support the skate in an upright position, and will maintain the frames horizontal, whatever may be the inclination to which the foot-piece is tilted. The face of the roller, instead of being round, is made flat transversely, affording a stable bearing the entire width of the roller. By making the roller of increased width, which I have found must exceed three-fourths the diameter, I am enabled to substitute glass or vitreous material for the materials heretofore employed, combining strength, lightness, and elegance, affording a hard, almost frictionless, bearing on the axle, and avoiding the use of the bushing employed in ordinary rollers. Owing to the nature of the vitreous material, a parlor-skate provided with glass or vitreous rollers possesses an important advantage over one having rollers of wood or hard rubber. When wood, hard rubber, or similar material is used for the rollers, constant use will polish the bearing-edge so that the roller is apt to slip under the lateral thrust on the skate, especially upon highly-polished wood or other floors. A roller of vitreous material, however, even if applied to the skate with a glazed edge, will, in a little time, become scratched and broken, until the edge is in the condition it is left after grinding, and is maintained in this condition by use, so as to take a firm hold upon the supporting-surface, and effectually prevent lateral slipping. When the glass roller is employed, it is preferable to grind the face *x*, to give it a better hold on the supporting-surface. Where glass rollers are not employed, the frictionless bearing may be still obtained by inserting a glass or vitreous sleeve or bushing in the ordinary roller. It will be apparent that one wide and one narrow roller may be used.

In my former skates, the spring *h* passed laterally through the stud *b*, the lateral opening weakening the stud, and the abrupt bending of the spring tending to break the latter.

By bending the end of the spring upward, and fitting it to a socket in an axial direction in the stud, as shown in Figs. 1 and 3, the strength of the stud is not materially impaired, while the spring will turn in the socket, thus avoiding the abrupt bend and danger of breaking.

I am aware that glass and vitreous rollers have been employed in casters, and that glass wheels and pulleys have been used; but I am not aware that a glass roller or wheel has ever been provided with a roughened periphery, for any purpose.

I claim—

1. A roller-skate provided with two swiveling-rollers, each pivoted in front of its bearing beneath one end of a tilting-stock, and having

its bearing at the rear of said pivot exceeding in width three-fourths the diameter of the roller, as and for the purpose set forth.

2. A skate provided with a spring, *h*, bent at the end, and adapted to an axial socket in the stud *b*, for the purpose specified.

3. As a new article of manufacture, a roller-skate, provided with vitreous rollers having roughened peripheries, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS W. SALADEE.

Witnesses:

E. J. SWEET,

CHARLES E. FOSTER.

W. LOCKWOOD.
PARLOR-SKATES.

No. 182,835.

Patented Oct. 3, 1876.

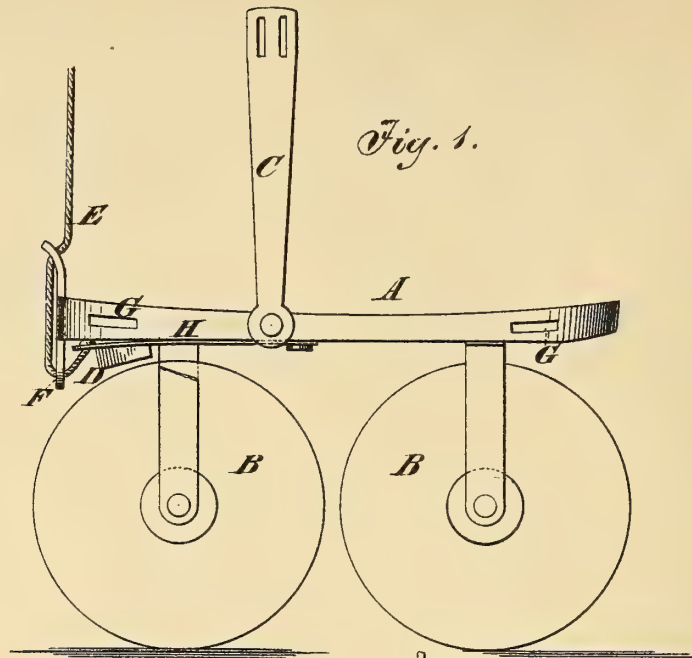
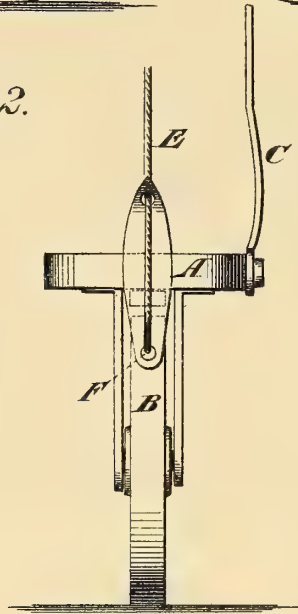


Fig. 2.



WITNESSES:

John Goethals
Alfred Sargott

INVENTOR:

W. Lockwood
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM LOCKWOOD, OF DANVILLE, MISSOURI.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **182,835**, dated October 3, 1876; application filed March 6, 1876.

To all whom it may concern:

Be it known that I, WILLIAM LOCKWOOD, of Danville, Montgomery county, Missouri, have invented a new and useful Improvement in Parlor-Skates, of which the following is a specification:

My invention relates to spring-brakes for parlor-skates, an attachment which has been heretofore used so as to bring the brake to bear upon the front wheel and connect it with a lever operated by the leg.

The brake which constitutes my invention is a spring, from which a string extends down through a guide and up to the hand of the operator, in such manner that the brake is forced down on the wheel by pulling up on the string.

Figure 1 is a side elevation of my improved parlor-skate, and Fig. 2 is a front elevation.

Similar letters of reference indicate corresponding parts.

A is the foot-piece; B, the wheels; C, the ankle-brace; D, the brake; E, the cord, and F the guide for the cords. The foot-piece has mortises G through it for the straps by which it is attached to the foot. The spring

H is made fast at one end to and under foot-piece A, at about the middle of the latter, while to and under its free end is placed the brake D. The latter is ordinarily held up by spring against the foot-piece; but when the brake is to be applied the operator pulls the cord E, which passes downwardly through the holes of guide and up to the free end of spring. The brake is thereby brought down upon the rear wheel of skate at the option of the wearer.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A parlor-skate provided with brake D, attached to the end of a spring, H, lying along the bottom of foot-piece, said spring being also provided with a cord that passes through guides F, and up within reach of the skater, as shown and described, for the purpose specified.

WILLIAM LOCKWOOD.

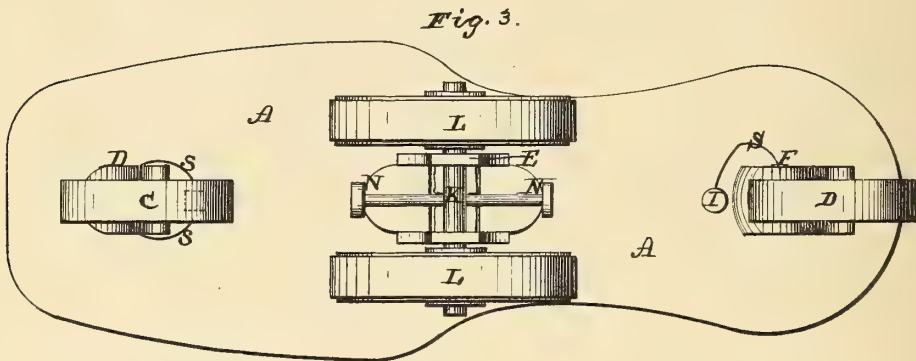
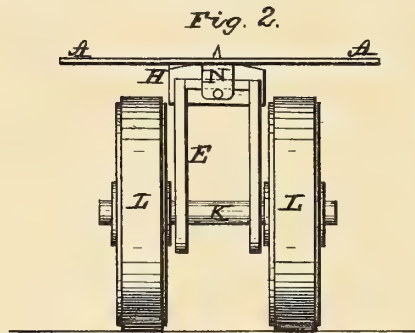
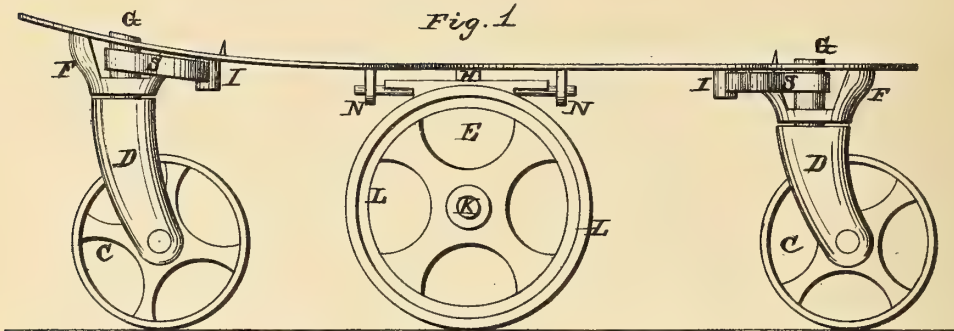
Witnesses:

BENJAMIN PALMER,
W. H. ARNOLD.

L. H. GANO.
PARLOR-SKATES.

No. 188,351.

Patented March 13, 1877.



WITNESSES:

Wm. Garner
J. H. Burnham

INVENTOR:

L. H. Gano
per
F. A. Lehmann, atty

UNITED STATES PATENT OFFICE.

LOUIS H. GANO, OF NEW YORK, N. Y.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **188,351**, dated March 13, 1877; application filed October 11, 1876.

To all whom it may concern:

Be it known that I, LOUIS H. GANO, of New York city, in the State of New York, have invented certain Improvements in Parlor-Skates, of which the following is a specification:

Figure 1 is a side elevation of my invention. Fig. 2 is a vertical cross-section of the same.

A represents the foot-plate, which has a bracket, F, secured to its under side at each end. Pivoted in these brackets and the foot-plate are the curved posts D, in the lower ends of which are journaled the wheels C. These posts are allowed to turn freely around, so that the wheels can follow the motion of the foot, like the casters do the motion of a piece of furniture, and they are curved backward, so that the wheels C will be thrown to the rear of the pivot-point G. Projecting downward from the under side of the foot-plate are the two studs or catches I, in which are fastened the flat curved springs S, the ends of which springs bear against the sides of the posts D and hold them in position until pressure is applied to turn them in either direction. Projecting downward from the under side of the plate A at suitable distances apart, are

the two hangers N, in which is journaled the bracket E, which is free to rock slightly from side to side with the motion of the foot. In order to prevent the striking of the bracket against the plate, and thus cause a rattling noise, a piece of rubber, H, is inserted between the two. In the lower end of the bracket is journaled the axle K, on the ends of which are placed the two large wheels L. These wheels may be made of wood or of metal, and tired with rubber, so as not to injure the floor.

Having thus described my invention, I claim—

1. The combination of the two posts D, pivoted in the brackets F and plate A, the springs S for bearing against the posts and wheels C, substantially as shown.

2. In combination with the wheels C, posts D, brackets F, and springs S, the bracket E, axle K, and wheels L, substantially as set forth.

LOUIS H. GANO.

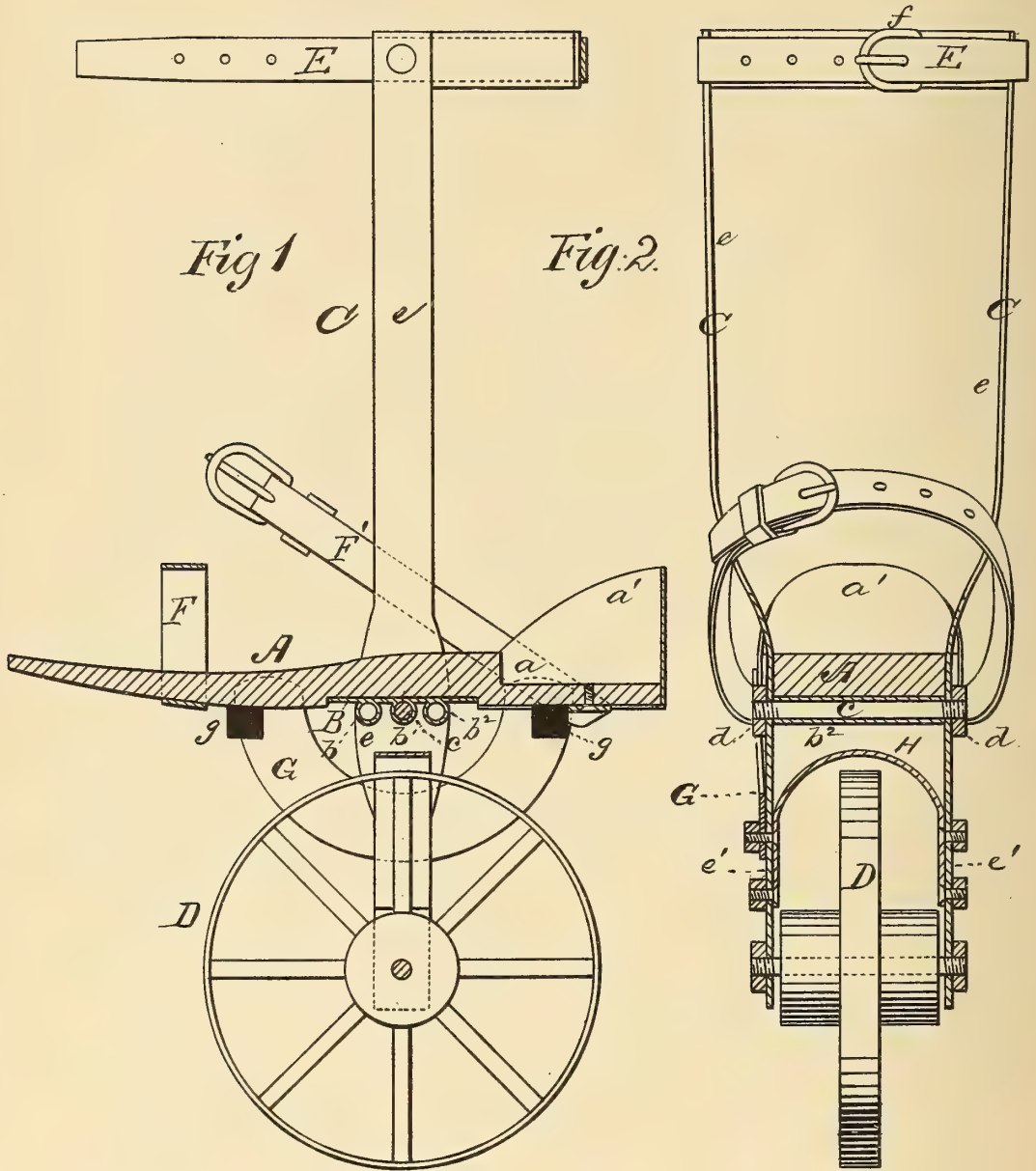
Witnesses:

N. M. PHILLIPS,
WILLIAM WIGGIN.

H. L. TRUE.
PARLOR-SKATES.

No. 189,285.

Patented April 3, 1877.



WITNESSES

M. S. Utley
A. J. Masie

INVENTOR

H. L. True
by E. W. Anderson

ATTORNEY

UNITED STATES PATENT OFFICE.

HIRAM L. TRUE, OF McCONNELLSVILLE, OHIO.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **189,285**, dated April 3, 1877; application filed March 3, 1877.

To all whom it may concern:

Be it known that I, **HIRAM L. TRUE**, of McConnellsville, in the county of Morgan and State of Ohio, have invented a new and valuable Improvement in Velocipede Parlor-Skates; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of my invention, and Fig. 2 is a cross-sectional view thereof.

This invention has relation to improvements in roller-skates; and it consists, first, in a skate having a single transporting-wheel of sufficient diameter, whereby the skater is able to guide himself to the right or left with great facility, and to make short turns, and the friction is reduced to a minimum; second, in the novel construction and arrangement of two strong upright plates or bars extending above and below the shoe, the upper extension serving as ankle-braces, and the lower one as bearings for the transporting-roller; third, in an adjustable shoe, vibrating on a rod or bolt between the uprights aforesaid, and capable of tipping backward and forward to allow of motion in the ankle-joint; fourth, in combining with a vibrating shoe, its uprights, and the bolt upon which the said shoe vibrates, a metallic plate, rigidly secured to the bottom of the shoe, having several bearings for the bolt, whereby the latter may be shifted to the front or rear in adapting the skate to feet of different lengths, and preserving the proper center of gravity; fifth, in movable brakes, secured to the under side of the shoe in front and rear of the roller, which will be brought in contact with the periphery of the wheel by tipping the said shoe, thereby locking the roller, and quickly arresting the progress of the skater; sixth, in a detachable semi-annular metallic side brace, secured at its ends to the shoe, and at its central part to the bearing-arm of the transporting-roller, whereby the shoe is made to preserve a rigid relation to the arms of the roller; and, finally, in an arched transverse

brace, extending from bearing-arm to bearing-arm under the shoe, and over the roller, whereby the said arms are prevented from spreading and allowing the said roller from escaping from its bearings, and the upright bars aforesaid are prevented from playing, all as will be hereinafter more fully explained.

In the annexed drawings, the letter **A** designates a wooden or metallic shoe-shaped plate, having at its rear end a recess, *a*, for the reception of the shoe-heel, and around the rear edge a metallic guard, *a'*, of the usual construction. **B** represents a strong metallic plate, rigidly secured to the under side of the shoe **A**, and provided with a number of spaced transverse bearings, *b b¹ b²*, in one of which the journal-bolt *c* of the roller-skate will have its seat. This bolt extends at its ends through the upright (preferably metallic) braces **C C**, and is secured in position by means of nuts *d*, tapped upon its projecting ends. Braces **C C** extend upward and downward a sufficient distance above and below the shoe **A**, as shown in Fig. 2, to form lateral ankle-braces *e* and bearing-arms *e'* for the transporting-roller **D**. In the drawings, bolt *c* is shown engaged in the middle bearing *b¹* of plate **B**, but may be shifted to the front or rear, as may be required for longer or shorter feet than common, in preserving a proper balance. **E** represents a suitable leather strap riveted to the upper ends of braces **C C**, and provided with a suitable buckle, *f*, by means of which it is bound around the leg above the ankle, thus converting the arms *e* into braces for preventing the ankle from turning. The shoe **A** is secured to the foot by means of the usual toe and instep straps **F F'**. It has free vertical vibration upon the journal-bolt *c*, and is provided upon its under side, in front and rear, with detachable brake-shoes *g*, which, by tilting the shoe, will come in contact with the periphery of roller **D**, and, by arresting its rotation, enable the skater to stop promptly. This tilting is prevented, if desired, by a semi-annular metallic brace, **G**, arranged at each side of the skate, the ends of which are rigidly secured to the shoe, and its lower central part to the arms *e'* of braces **C C** below the said shoe. The braces **G** are readily detachable by removing the fastening-bolts. The

transporting-roller is journaled in any suitable manner in the lower ends of the arms *e'* aforesaid, there being but one such roller, and the arms are prevented from spreading, twisting, or any relative endwise displacement, by means of an arched transverse metallic brace, *H*, rigidly secured, by suitable nuts and bolts, to the said arms, and spanning the roller.

There being but one transporting-roller, turning short to the right or left is very easily accomplished by the skater, thereby enabling him to avoid collisions in a crowded rink, and to perform many graceful evolutions, as well as attain great speed.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a parlor-skate shoe, having suitable fastenings, and a central journal-bearing below said shoe, of a single roller, arranged under the hollow of the shoe, below the level of the same, substantially as specified.

2. The combination, with a parlor-skate shoe, of a roller, *D*, which is adjustable to the front or rear, substantially as specified.

3. The braces *C C*, extending above and below a skate-shoe, *A*, to form ankle-braces *e* and bearings *e'* for a roller, substantially as specified.

4. The shoe-plate *A*, having plate *B*, pro-

vided with spaced bearings *b b¹ b²*, in combination with braces *C C* and the journal-bolt *c*, substantially as specified.

5. The shoe-plate *A*, adjustable to front or rear, in combination with the braces *C C* and the transporting-roller *D*, substantially as specified.

6. The rocking shoe-plate *A*, in combination with the braces *C C*, bolt *c*, and the transporting-roller *D*, substantially as specified.

7. The combination, with the braces *C C* and the transporting-roller *D*, of the shoe-plate *A*, having brake-shoes *g*, and the journal-bolt *c*, substantially as specified.

8. The combination, with the braces *C C*, the shoe-plate *A* journaled therein, and the transporting-roller *D*, of the semi-annular braces *G*, locking the said plate against vibration, substantially as specified.

9. The arched transverse brace *H*, in combination with the braces *C C*, shoe-plate *A*, and roller *D*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HIRAM L. TRUE.

Witnesses:

F. B. POND,

WILLIAM FOULKE.

R. GIBSON.
ROLLER-SKATES.

No. 189,451

Patented April 10, 1877.

Fig. 1.

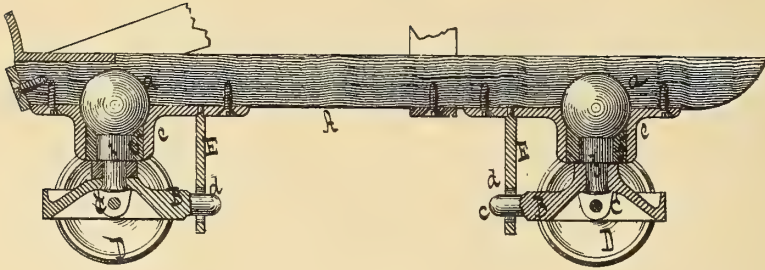


Fig. 2.

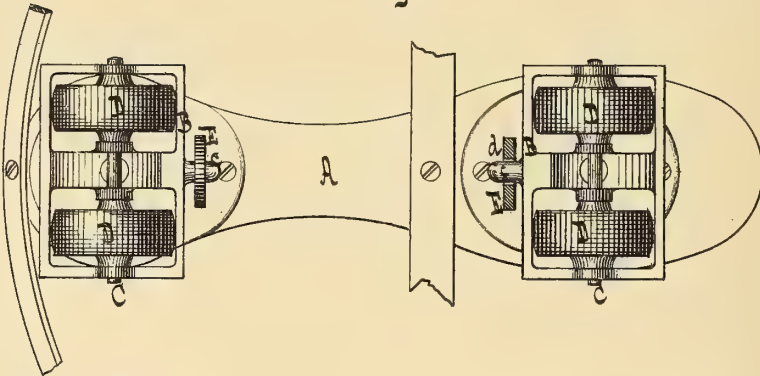
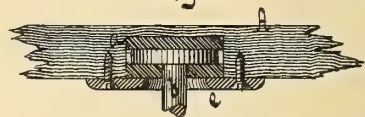


Fig. 3.



Fig. 4.



Witnesses.

Otto Schulz.
Hugo Buschmann

Inventor.

Robert Gibson
by
Van Lantvoord & Hauff

his attorneys.

UNITED STATES PATENT OFFICE.

ROBERT GIBSON, OF NEW YORK, N. Y.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **189,451**, dated April 10, 1877; application filed March 24, 1877.

To all whom it may concern:

Be it known that I, ROBERT GIBSON, of the city, county, and State of New York, have invented a new and useful Improvement in Roller-Skates, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is an inverted plan, partly in section.

Similar letters indicate corresponding parts.

This invention consists in the combination of a vertical swivel standard and of a regulator with the roller frame or truck, and with the foot-plate of a roller-skate, said roller-frame being provided with a pin which projects through a hole in the regulator, so that by bringing the weight of the body to bear on one side of the foot-plate the roller-frame is caused to adjust itself in an oblique position, and the skate describes a curve, while at the same time the roller-frame is prevented by the regulator from swiveling clear round or from assuming an impracticable or dangerous position. The connection between the standard of the roller-frame and the foot-plate is effected by a ball-and-socket joint, which allows said roller-frame to assume a compound motion in relation to the foot-plate, whereby the operation of describing a curve is facilitated. With the swivel-standard of the roller-frame, and with the socket which forms the bearing for said swivel-standard, is combined an elastic packing for preventing said standard from wearing against the edges of its sockets.

In the drawing, the letter A designates the foot-plate of a roller-skate, which may be made of wood or any other suitable material, in the form best adapted for the purpose which it is to serve. On the under surface of this foot-plate are formed two sockets, *a a*, which form the bearings for standards *b b*, rising from roller-frames B B, so that said standards, together with the roller-frames, can swivel freely in their sockets.

In the example shown in the drawing, the ends of the standards are globe-shaped, and the sockets are formed to correspond to this shape, so that ball-and-socket joints are pro-

duced which allow the standards a certain freedom of motion advantageous for skating. This freedom of motion may, however, also be obtained to a certain extent by making the ends of the standards hemispherical, and placing an elastic cushion between them and the segmental plate which holds it in place, as shown in Fig. 3, or said ends may be made disk-shaped, and elastic cushions placed above and below, as shown in Fig. 4. The roller-frames B B form the bearings for axles C C, each of which supports one or two rollers, D D, said axles being by preference firmly mounted in the roller-frames, while the rollers turn loosely on the same.

From each of the roller-frames B B projects a pin, *c*, through a hole, *d*, formed in a standard, E, which is firmly secured to the under surface of the foot-plate, and which forms the regulator. The holes *d* are made somewhat larger than the pins *c*, so that the roller-frames B B are free to turn in a horizontal plane, and the foot-plate is allowed to assume a slightly oblique position. If the skater brings the weight of his body to bear on one side of the foot-plate, the roller-frames assume an oblique position, so as to enable the skater to describe any desired curve, while at the same time the regulators E prevent the roller-frames from swiveling round to such an extent that the stability of the skater would be endangered.

The standards *b* are retained in their sockets *a* by means of segmental plates *e*, which are firmly secured to the under surface of the foot-plate, and which embrace the shanks of said standards. These shanks are protected by elastic cushions *f*, so that they do not wear against the edges of the segmental plates.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination of a vertical swivel-standard, *b*, and a regulator, E, with the roller frame or truck supporting the axle of the rollers, and the foot-plate A, all constructed and arranged to operate substantially as and for the purpose herein described.

2. The combination, with the foot-plate A, standard *b*, and roller-frame B, which con-

tains the rollers D D, of a ball-and-socket joint, substantially as and for the purpose set forth.

3. The combination, with the foot-plate A, swivel standard *b*, roller frame B, and the segmental plates *e*, which retain the standards in their sockets, of elastic cushions *f*, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 21st day of March, 1877.

ROBT. GIBSON. [L. S.]

Witnesses:

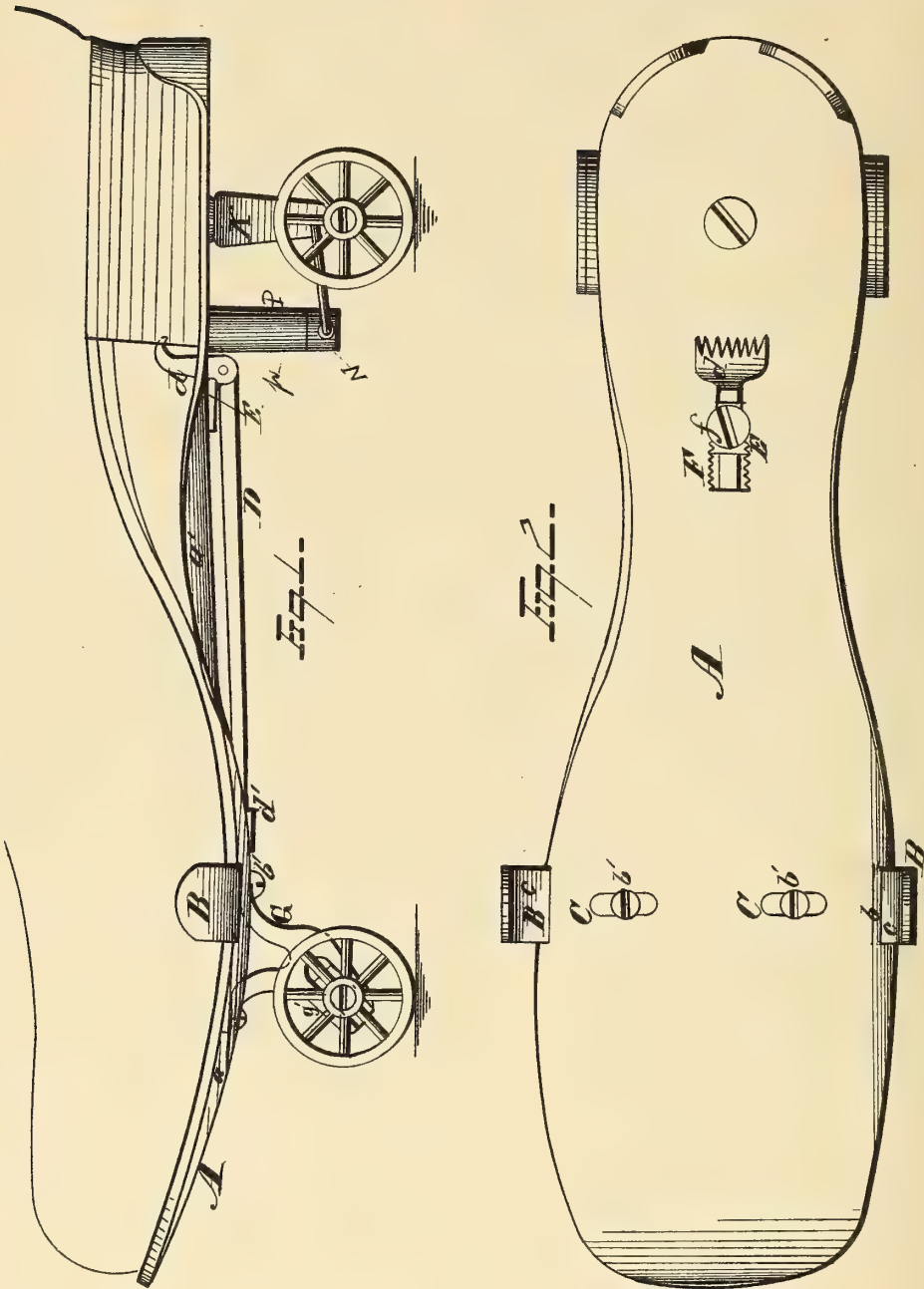
W. HAUFF,

E. F. KASTENHUBER.

J. W. POST.
PARLOR SKATE.

No. 189,783.

Patented April 17, 1877.



WITNESSES

Ed. J. Nottingham
H. B. Groff

INVENTOR

John W. Post
by J. R. Nottingham

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN W. POST, OF NEW YORK, N. Y.

IMPROVEMENT IN PARLOR-SKATES.

Specification forming part of Letters Patent No. **189,783**, dated April 17, 1877; application filed April 4, 1877.

To all whom it may concern:

Be it known that I, JOHN W. POST, of New York, in the city and county of same name, have invented certain new and useful Improvements in Skates, which improvements are fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is a view in side elevation; Fig. 2, a top-plan view; Fig. 3, a reverse plan view; Fig. 4, a similar view of the axle and rollers of the skate detached; and Fig. 5 is a modification view of the rear roller-frame, all being the respective views of a skate made according to my invention.

The object of the said invention is to furnish a skate, commonly known as "roller" or "parlor" skates, which shall be of as light construction as possible, free from disagreeable rattling and loose action caused by wear, and which, by its simplicity of parts, will lessen the cost of first production, and also reduce the expense attendant upon consequent wear.

The foot-supporting plate A is made of sheet metal, as light as is consistent with good wear, and has lateral strengthening-ribs formed on either side thereof by the downwardly-projecting flange or flanges *a* on the forward part of the skate, while the rear part has the upwardly-projecting flanges *a'*. The forward flanges *a* have the horizontal slots *b*, through which the sole-clamping plates B pass, and are secured to the main plate A by the adjustable screw-bolts *b'*, which latter have transversely-adjustable engagement in the slots C. The under or reverse sides of these clamping-plates are grooved longitudinally with the length of the skate, and so that the tightening of the screws *b'* will cause the flanges *a* to be seated in the said grooves *c*, and thus the clamps will be secured against transverse displacement relative to the main plate A. The intricate engaging mechanism heretofore used in adjustably connecting the clamps to the main plate is thus dispensed with, and at the same time the strain is reduced, and also easily sustained by the engagement of these flanges with the groove-faced clamping-plates.

The heel-clamp consists of the swinging lever-arm D, pivoted to the fulcrum-plate E, which latter has toothed sides corresponding

to the double rack-side of the slot F in the foot-supporting plate. By means of the screw-bolt *f* this fulcrum-plate is adjusted longitudinally of the skate, according to the length of the skater's heel, and the serrated jaw *d* is caused to bite or engage with the front part of the heel. A catch, *d'*, allows the lever-arm D to spring and become secured after gripping the jaw *d* in the skater's heel.

The forward rollers are secured to the standard G by a pivot engaging the axle *g* between the bifurcated arms *g'*, and this axle directly connects with the standard by a rocking bearing-joint. Springs H on either side of the central projection of this standard serve to give a tensioned lateral bearing to the axle, so that the rollers will always tend to be kept in a line of direction parallel with that of the foot-supporting plate A, and, when pressed to one side by the weight of the skater, will return automatically to their former position upon release of such lateral pressure. Rubber blocks, padded cushions, or other similar elastic material, may be substituted for the springs made of metal, as they will accomplish the same purpose. Since the axle of the roller has direct bearing relative to the standard G, the number of parts is reduced to as few and simple in construction as is possible.

Since the line of the center of gravity passes through the pivotal point of the roller-frame, it follows that, as the weight of the skater is inclined to one side in excess of the other, the roller will be turned in a line of direction angular to that of the main plate, and thus, to turn in any given direction, the skater throws his weight on that side, and the lateral spring-bearings serve to cause the parts to resume their former position as the side pressure is relieved.

The rear or heel standard K has its upper extremity formed with the annular or globular recessed bearing *k*, in which seats the corresponding annular countersunk walls of the slot L in the foot-supporting plate A. A pivot, *l*, screw-threaded at its lower extremity, connects the two together, so that the standard has free rotary motion under the said plate, while, at the same time, it gives full vertical bearing to the latter.

The U-formed lever-arm M is loosely secured

to the front uprights of the standard, and at its free or swinging cross-extremity it carries the sleeve-bearing of the stem N, which latter works in the socket of the standard P. A pin, *p*, passing through a conical slot of the stem N, secures the latter in its socket, while allowing it to have free rotary movement in a horizontal plane.

While I have shown the roller-supporting standard G as bearing the forward portion of the skate, it is evident that it may be interchanged with the roller-frame and foot-supporting-plate connection, (shown as supporting the rear of the skate;) or both of the same may be singly used on the front and rear of a skate, independently of the other, and I desire to be understood in claiming such a construction as within the principle of my invention.

The rollers have their rims wide, and made of one continuous piece of metal, and their spokes are hollow cylinders, so that as large a surface as possible can be obtained, and, at the same time, the roller will be light and easy in travel. Between the side flanges *t* of the rollers india-rubber or other elastic bearing-surfaces are secured, so as to render the skate noiseless, and also springy in its tread.

To still further prevent noise, and, at the same time, obviate any loose working of the parts, the journal-bearings are made compensating, so as to take up all loose wear. The inner shoulder T of the axle, against which the hub abuts, is made with tapering or inclined sides instead of square, and the independent conical-faced sleeve *u* is placed in the outer end of the hub of the roller. An ordinary washer-nut, *w*, secures the parts in place, and by tightening the same the conical sleeve *u* forces the hub close upon the tapering-sided shoulder T, and thus takes up all lost wear.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The lateral strengthening-ribs, formed on the foot-supporting plate by the downwardly-projecting flange or flanges along the forward part of the plate, and the upwardly-projecting flanges along the rear part of the same, substantially as described.

2. The combination, with the heel-clamp and engaging-screw, of the independent fulcrum-plate, the latter having notched sides engaging with the double rack-side of the foot-supporting-plate slot, in which it is longitudinally adjustable, substantially as described.

3. The downwardly turned flange or flanges, in combination with the sole-clamp plates, the latter having grooved faces, in which the flanges are seated, so as to secure the clamps against transverse displacement, while the same are adjustable by an ordinary stud-and-slot engagement, substantially as described.

4. The front standard, formed of a metallic piece directly secured to the main plate, and having the bifurcated-arm extremity, in combination with a roller-axle, the latter seating in a rocking bearing between the said bifurcated arms, and connected thereto by a single engaging-pin, the said standard having elastic cushions or springs on either side of its pivotal center, on which the axle directly bears, substantially as described.

5. The combination of the rear standard and the foot-supporting plate, the two connected by the countersunk wall of the annular slot seating in the globular bearing of the standard, the said standard carrying the U-formed lever-arm, upon the free extremity of which the guiding-stem has a sleeve bearing as it rotates, in its fixed socket, substantially as described.

6. A skate-roller the rim of which is made of one continuous piece of metal, and the spokes of which are made tubular, substantially as described.

7. The combination, with a skate-roller, of the inner tapering axle-shoulder and the loose outer conical sleeve, whereby lost wear is taken up by the tightening of the ordinary washer-nut, in connection with an oscillating axle pivoted to the standards of a roller-skate, arranged to operate substantially as described.

In testimony whereof I hereunto set my hand this 3d day of April, A. D. 1877.

JOHN W. POST.

Witnesses:

J. R. NOTTINGHAM,
OTTO DE MOLL.

W. A. LEGGO & F. C. IRELAND

ROLLER-SKATE.

No. 191,350.

Patented May 29, 1877.

FIG. 1

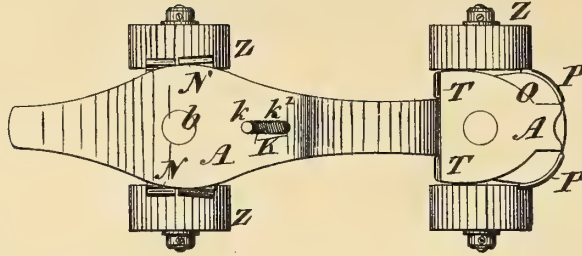


FIG. 2

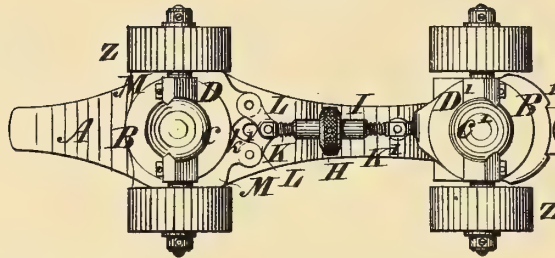


FIG. 3

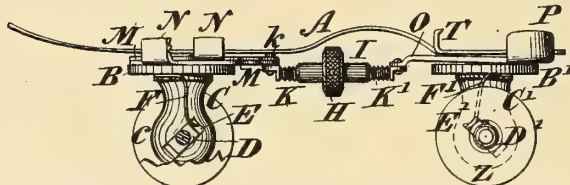


FIG. 4

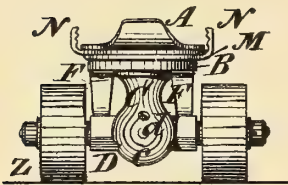


FIG. 5

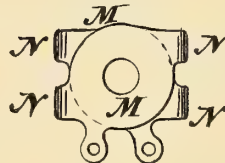


FIG. 6



Witnesses:

Robt. Arthur Kellogg
Harley Lawrie

Inventors:

W. A. Leggo
F. C. Ireland
By their atty. Thos. H. Leggo

W. A. LEGGO & F. C. IRELAND.

ROLLER-SKATE.

No. 191,350.

Patented May 29, 1877.

FIG. 7

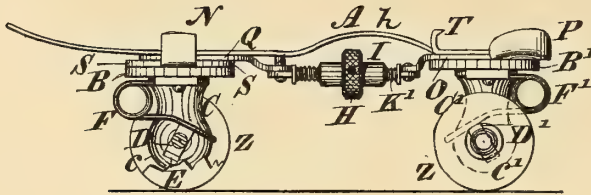


FIG. 8

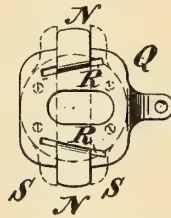
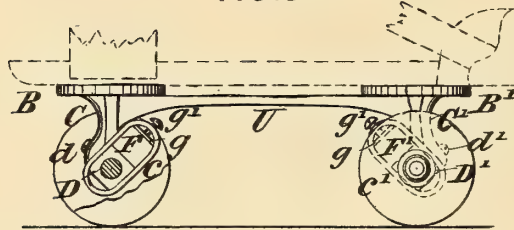


FIG. 9



Witnesses:

Robt. Arthur Kellogg
Harley Laurie

Inventors:

W. A. Leggo
F. C. Ireland
By them atty. Robt. Kellogg

UNITED STATES PATENT OFFICE.

WILLIAM A. LEGGO, OF MONTREAL, AND FRANCIS C. IRELAND, OF LACHUTE,
QUEBEC, CANADA; SAID LEGGO ASSIGNOR TO SAID IRELAND.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **191,350**, dated May 29, 1877; application filed
December 20, 1876.

To all whom it may concern:

Be it known that we, WILLIAM AUGUSTUS LEGGO, of the city of Montreal, in the county of Hochelaga, and FRANCIS CHARLES IRELAND, of the village of Lachute, in the county of Argenteuil, both in the Province of Quebec, Canada, have invented certain new and useful Improvements in Skates; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention, although capable of being adapted in some features to the ordinary ice-skates, is chiefly intended to apply to roller-skates; and its object is to so modify and improve their construction as to enable the skater to perform, with far more ease and precision than before, figures of all kinds.

The invention may be briefly described as consisting, mainly, in the arrangement, in combination with the foot-plate of a roller-skate, of stands projecting downward, in the lower parts of which are formed slots or openings, set obliquely, through which pass the axles, which are angular, preferably oblong in section, and properly secured in place, and fitting said slots. A spring or springs, bearing against the axles, keep them, when at rest, quite horizontal, and at right angles to the longitudinal axis of the skate, and this position will be retained so long as the skater holds himself perfectly upright; but should he incline either to the right or left, the axle will move in such a way as to take him in that direction, the springs only interposing a yielding resistance.

For fuller comprehension, however, of our invention, reference must be had to the annexed drawings, in which similar letters indicate like parts, and where—

Figure 1 is a plan view of our skate, looking down. Fig. 2 is a bottom view thereof. Fig. 3 is a side view, partly in section. Fig. 4 is a front view of the skate. Fig. 5 is a detail of the fastening for the sole. Fig. 6 is a detail of the fastening for the heel. Fig. 7 is a side view, partly in section, of a modification of our fastening. Fig. 8 is a view of a modification of our fastening. Fig. 9 is a side view, partly in section, of a modification of our skate.

A is the foot or boot plate, which may be of steel, brass, or any other suitable material, and either correspond to the outline of the boot or not, as desired. To these foot or boot plates are firmly secured, by screws, pins, or in any other suitable way, plates B B', placed, preferably, as shown in Fig. 3, under the ball and heel plate A. From these plates B B' project downward standards C C'. The lower parts of these standards C C' are enlarged, as shown at *c c'*, in order to form sockets to receive the axles D D' of the two pairs of rollers Z. These axles D D', which, as shown in the drawings, are in the center part of their length rectangular in section, and larger one way than the other, pass through slots E E', formed in the standards C C' at the enlarged portions *c c'*, and are secured therein by pins *d d'*, or in any other usual way, admitting of oblique lateral motion thereof on said pins in the oblique slots. The slots E E' are also rectangular, corresponding in size to the smaller measurement of the axles, and somewhat longer than their longer sides, and are formed obliquely, inclining inward at any angle desired. Against the inner and upper sides of the axles D D'—i. e., behind the front axle D, and in front of the rear axle D'—press springs F F', which, as shown in Fig. 3, may be double, or each formed of one coiled spring, as in Fig. 7, and, as in both these instances, carried outside the sockets, and secured to the plates B B'; or these springs may be formed of rubber or other elastic substance, or of metal and spiral, and be contained within the slots E E'. In this latter arrangement a small plate, *g*, may be introduced in each slot, and the spring be adjusted by compression-screws *g'*; or these features may be omitted, and the spring fill up the whole space of the slot not occupied by the axle.

In some cases a small amount of elastic or other filling may be placed in the slot, the opposite side of the axle to the spring.

The wheels or rollers Z may be of any suitable size and material, revolving freely on their axles, and secured thereto in any usual way.

The skates may be fastened on by straps; but in many cases we prefer to secure them to

the boots by means of clamps, operated by mechanism which we will proceed to describe.

H is a turn-nut mounted on a sleeve, I, in which is cut a right-and-left thread, operating simultaneously screws K K'. In one form of fastening the screw K is, by means of a pivot-pin, *k*, passing up through the plate A, working in a slot, *k'*, and acting as a guide, attached to links L L, pivoted to projections from double plates M M, working on the center-pin *b* of the plate B, between which and the foot-plate they are placed. The clamps N N, formed on these plates M, are, by the turning of the nut H, closed on or loosened from the boot through the action of the toggle-joint, and simultaneously with this action the screw K', attached to the plate O, on which are formed the heel-clamps P, brings these in contact with, or loosens them from, the heel of the boot.

In the modification shown in Figs. 7 and 8, instead of the plates M M working on the center-pin of the plate B, a single plate, Q, is used, placed, as before, between the plate B and foot-plate A, and having formed in it converging slots R, in which are inserted the inner turned-up ends of the clamps N, which are prevented from moving in the direction of the skate by the extensions S S, formed in one with or secured to the plate B, but free to move laterally, and are drawn in or pushed out, so as to grasp or let go of the boot by the forward or backward movement of the

plate Q, which is, as seen, slotted, so as not to interfere with the center-pin.

In the periphery of the turn-nut H are formed any suitable number of apertures, *h*, in which may be introduced a nail, piece of wire, &c., to tighten up the screws K K' after they have been turned as far as possible by hand.

It will seen that in our invention the movable clamps P are in rear of the boot-heel, and press it against fixed bearing-projections T, secured to the plate itself.

In some instances the foot-plate may be entirely omitted, and the plates B B' screwed directly to the sole and heel of the boot, and in such a case a rib, U, will be arranged to connect the two stands; or this rib may act as a web to foot-plate secured to the boot by screws only, or by screws and straps combined.

Having thus described our invention, what we claim is as follows:

In a roller-skate, the combination, substantially as specified, of the stands, projecting downward from the boot or foot plate, and provided with oblique slots, the angular roller-axles, seated in said oblique slots, and pivoted to the stands, and the springs bearing on the axles.

Montreal, 12th day of December, A. D. 1876.

W. A. LEGGO.

F. C. IRELAND.

Witnesses:

FRAS. HY. REYNOLDS,

ROBT. ARTHUR KELLOND.

J. MINER.
ROLLER-SKATE.

No. 191,542.

Patented June 5, 1877.

Fig. 1.

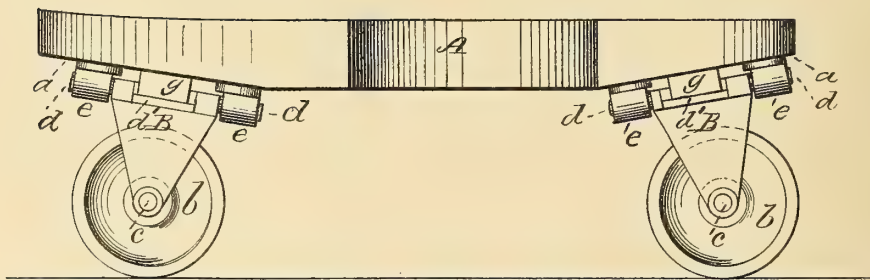


Fig. 2.

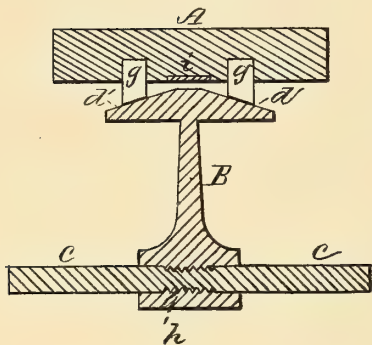
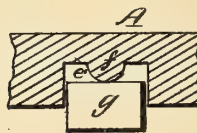


Fig. 3.



WITNESSES

Nat. E. Oliphant
Wm. Pearce

INVENTOR

John Miner.
per Chas. H. Fowler
Attorney.

UNITED STATES PATENT OFFICE.

JOHN MINER, OF DETROIT, MICHIGAN.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **191,542**, dated June 5, 1877; application filed April 16, 1877.

To all whom it may concern:

Be it known that I, JOHN MINER, of Detroit, in the county of Wayne and State of Michigan, have invented a new and valuable Improvement in Roller-Skate; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my invention. Fig. 2 is a section through the casting and heel and sole plate. Fig. 3 is a view showing the recess for the rubber spring.

This invention has relation to roller-skates; and its object and purpose are to construct a skate of the above character simple in its parts, and one that can be easily and readily governed by the skater in guiding or steering himself in such direction as he may think proper; and the invention consists in the general construction of the parts, as will be hereinafter described, and subsequently pointed out in the claims.

In the accompanying drawings, A represents the heel and sole plate, preferably of wood, and is formed upon its under side at both ends with inclines *a*, thereby allowing a greater extent of rocking motion, and enabling the skater to control the skate, and more readily and effectually guide or steer it to the direction desired.

The rollers *b* are secured upon axles *c* of the castings B, said castings being formed with journals *d*, by which they are secured to the under side of the sole and heel plate A by means of the eyes *e*.

These castings B have two incline bearing-plates, *d'* *d'*, and upon the under side of the heel and sole plate A are recesses *e'*, with a rib, *f*, said recesses receiving and holding a rubber spring, *g*.

The two inclines upon the bearing-plates *d'* *d'* of the casting B admit of the skate having a free rocking motion either way, and also act as stops and bearings, so that when brought in contact with the under surface of the heel and sole plate, and against the inclines *a*, a very firm support is obtained for the foot, and the rollers are prevented from coming in contact with the skate-wood.

The ribs *f* in the recesses *e'* prevent the rubber springs *g* from extending too far into the recesses, and thereby form a space each side of the rib, by which the rubber has room to yield, and thus allow the inclined plates *d'* *d'* to bear upon the under side of the wood and form a support for the plate A, while the spaces formed by the rib *f* admits of the spring *g* acting with greater force to throw back the casting from either right or left to a horizontal position.

The castings B may be formed in a single piece with the axles *c*; but as the axles should be of harder metal than that of which the castings are composed, I prefer to form the axle separate, with serrations *h* near its center, and afterward place it in a suitable mold, and pour the metal which is to form the casting B around it, the roughened surface or serrations *h* preventing the axle from working loose.

Protecting-plates *i* may be secured to the under side of the plate A, to prevent that portion of the casting between the rubber springs from coming in contact with the wood, and thereby preserving it from wear.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The castings B, formed with the laterally-inclined plates *d'* *d'*, in combination with the heel and sole plate A, with springs *g*, substantially as and for the purpose specified.

2. The combination, with the heel and sole plate A, formed at both ends and upon its under surface with inclines *a*, of the castings B, formed with inclined plates *d'* *d'* and spring *g*, substantially as and for the purpose set forth.

3. The heel and sole plate A, formed with recesses *e'* and rib *f*, for the reception of the rubber spring *g*, substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN MINER.

Witnesses:

DESIRE B. WILLEMIN,
MOSES C. MINER.

R. HUTTON.
Roller-Skates.

No. 196,230.

Patented Oct. 16, 1877.

Fig: 1.

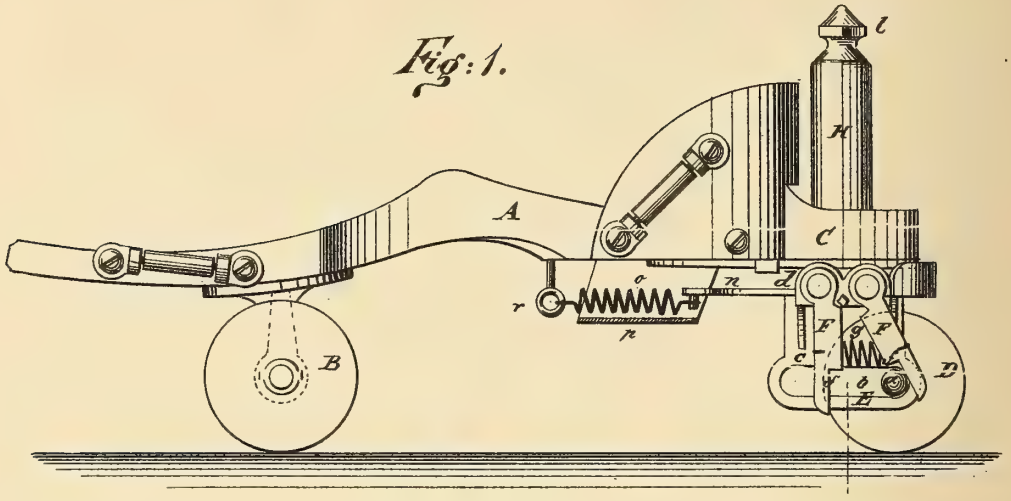


Fig: 2.

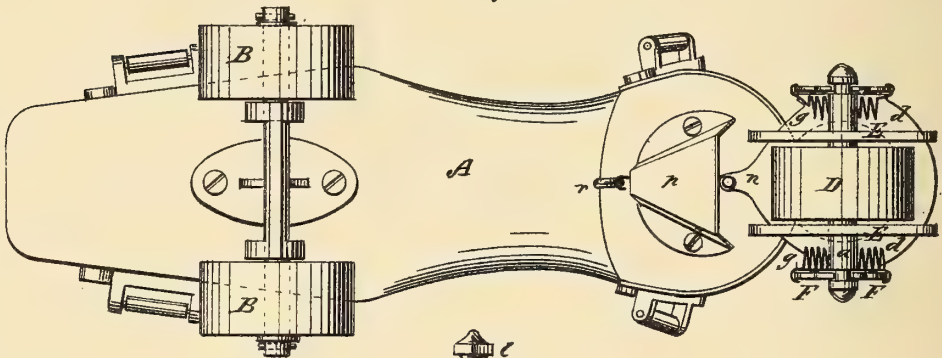
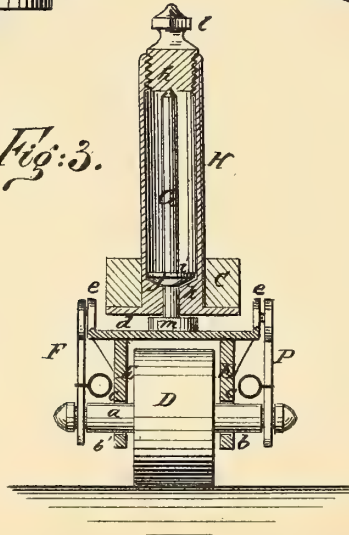


Fig: 3.



WITNESSES:

Cnas. Nida
H. D. Wattenberg

INVENTOR:

Robert Hutton
BY *Amos J. Hutton*

ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT HUTTON, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF HIS
RIGHT TO PHILIP HAFFNER, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **196,230**, dated October 16, 1877; application filed
August 13, 1877.

To all whom it may concern:

Be it known that I, ROBERT HUTTON, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Roller-Skate; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making part of this specification.

This invention is in the nature of an improvement in roller-skates.

The invention consists in a roller-skate having a rear roller constructed with a bearing within which the axis of the roller may shift in a straight line, either to the front or rear of its normal central position, in which normal or central position the horizontal axis of the roller is at right angles to a vertical axis.

The invention also consists in a roller-skate with the rear roller having bearings within which the horizontal axis of the roller may shift in a straight line, and provided with fingers, in combination with the axis of the roller, whereby said axis is restored to its normal central position within the bearings.

The invention also consists in a roller-skate with a vertical axis, constructed with a spindle provided with a conical bearing-surface, located near the lower part of said spindle, and fitting into a corresponding conical seat; and the invention also consists in a roller-skate with its rear roller provided with a spring, whereby the roller may be restored to its normal central position after it has been turned on its vertical axis.

In the accompanying sheet of drawings, Figure 1 is a side elevation of my improved roller-skate; Fig. 2, a view of under side of skate; and Fig. 3, a cross-section taken in line *x x*, Fig. 1.

Similar letters of reference indicate like parts in the several figures.

A represents the sole of the skate, which may be of wood or any other suitable material. To the under side of the sole A, and at a short distance from the front end of the same, are fixed, and in suitable bearings, rollers B. These rollers are fixed to their support and bearing, so that their axis shall at all times be at right angles to the sole A. To the rear of the sole

A, or, rather, to a prolongation, C, from the heel of the same, is secured the rear roller D.

The roller proper, D, may be made of wood or other suitable material, and through its center passes an axis, *a*, so that the roller may freely revolve on its axis. The portions of the axis *a* which protrude on either side of the roller D are received in and supported by bearings E. These bearings consist of horizontal slots *b*, formed into plates *c*, which plates are secured at right angles to, and depend from, a circular plate, *d*.

The horizontal slots *b*, which constitute the bearings before referred to, are of a width sufficient to permit the introduction of the axis *a*, and so that said axis may slide readily to and fro within such bearings.

The circular plate *d*, to which the plates *c* are secured, as aforesaid, is constructed with lugs *e*, located on either side of said plate. To these lugs are loosely riveted fingers F, two fingers on each side of the plate, as shown in Figs. 1 and 2, so that when the axis *a* of the roller D is in its normal position, which is exactly midway from either extremity of the slot *b* or bearing, the said axis will be received between the fingers F, which will then depend at right angles to the circular plate *d*, and bear against the said axis *a*, and for this purpose that part of the fingers which bear against the axis have recesses *f* formed therein. Uniting the fingers F is a spiral spring, *g*, the ends of which are secured, respectively, to the fingers F, as shown in Figs. 1 and 2.

Firmly fixed to the center of the circular plate, and on its upper surface, is a spindle, G. This spindle has a conical bearing, *h*, formed in its upper end, and a collar, *i*, with a conical under surface, *j*, secured to it at a point near its lower end. This spindle is received within a cylinder, H, which cylinder has at its lower end a conical seat, *k*, corresponding to the conical under surface *j* of the collar *i*, within which said collar rests, and also a screw-cap, *l*, which receives the conical bearing *h* at the upper end of the spindle G, as shown in Fig. 3. The spindle, when in this position, is fixed to the prolongation C by passing up through the prolongation, and a bearing-plate, *m*, affixed to the under side thereof. To the circular plate

d, or to a lug, *n*, thereof, is secured one end of a spiral spring, *o*, which spiral spring is protected by a hood, *p*, and has its other end secured to a suitable fixture, *r*.

Now, my roller-skate being constructed substantially as I have described it, its operation is as follows: When the skates are affixed to the feet of the user, and the user propels them in a straight line, the rear roller *D* revolves in a direction parallel with the front rollers *B*, and in a line coincident with a line drawn longitudinally through the center of the sole *A*; but when the user desires to describe a curve with the skate, or change the position of his feet from a straightforward course to some other, then the increased friction thrown upon the periphery of the wheel *D* causes the circular plate *d* (which, as before described, supports the roller through its bearings) to turn on the vertical spindle *G*, so that the roller *D* assumes a position more or less at an angle from its normal position, adapting itself to the change of position of the feet of the user, that it may revolve with equal facility in its changed position as it revolved before the change of position was made. Simultaneously with the change of course, the axis *a* of the roller *D* slides within the slots *b* of its bearings—to the rear end of the slots when the skate is propelled forward, and to the front end of the slots when the skate is propelled backward. This shifting of the axis *a* throws the axis in front of or behind the vertical spindle *G*, so that a leverage in length equal to the end of the slot *b*, to which the axis has shifted, and the center of the vertical spindle, is exerted on said central axis, thereby greatly facilitating and causing the circular plate *d*, and with it the roller *D*, to turn, that the roller *D* will accommodate itself to any curve on which the skate is propelled with great promptness, and thereby roll with equal facility on such curves. With such construction the roller *D* will readily revolve with every possible change of direction of the skate without at any time becoming fixed or dragging on the floor, which would retard the skater, and, under some circumstances, trip him.

The fingers *F*, as the axis *a* of the roller *D* is shifted in the slots *b*, yield or open, as shown in Fig. 1, the spring *g* expanding for that purpose, and exert an elastic pressure against the axis, that facilitates the shifting of the axis within the slot materially, the spring at all times exerting a force to restore the axis to its normal position, which force insures promptness in change of position of the axis

within its bearings, and consequently promptness in change of position of the roller *D* by reason of the turning of the vertical spindle *G*, as before stated.

To restore the roller *D*, or to assist in restoring it, and maintaining it in a position coincident with a line drawn longitudinally through the center of the sole *A*, the spring *o* exerts its force, which spring is expanded as the circular plate *d* turns on the spindle *G*, and the recovery of the spring assists to effect the restoration of the roller to the position before named.

To prevent the vertical spindle *G* wearing loose within its bearing, and to maintain at all times a true circular turning of the spindle without wobbling, in addition to the bearing *h* at the end of the spindle, I also affix to it a collar, *i*. This collar, with its conical under surface *j*, fits into a corresponding conical bearing, *k*, giving a broad bearing-surface, which is truly maintained as the bearing wears in use.

Having now described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A roller-skate with a rear roller having its axis borne within slots, whereby said axis may shift in a straight line within said slots, substantially as and for the purpose described.

2. In a roller-skate, the axis of the rear roller combined with finger-plates and spring, to facilitate the shifting of the axis within its bearings, substantially as and for the purpose described.

3. In a roller-skate, a circular revolving plate constructed with supporting finger-plates, substantially as and for the purpose described.

4. In a roller-skate, a vertical spindle, constructed with a collar having a convex under surface, which collar is located near the lower end of said spindle, substantially as and for the purpose described.

5. In a roller-skate, a vertical spindle with a conical bearing at its upper end, and a collar with a convex under surface, substantially as and for the purpose described.

6. In a roller-skate, a revolving circular plate combined with a spring, whereby said circular plate may be assisted to assume and maintain a given position, substantially as described.

ROBERT HUTTON.

Witnesses:

H. L. WATTENBERG,
G. M. PLYMPTON.

H. LUMBÿE.
Roller-Skates.

No. 197,385.

Patented Nov. 20, 1877.

Fig. 1.

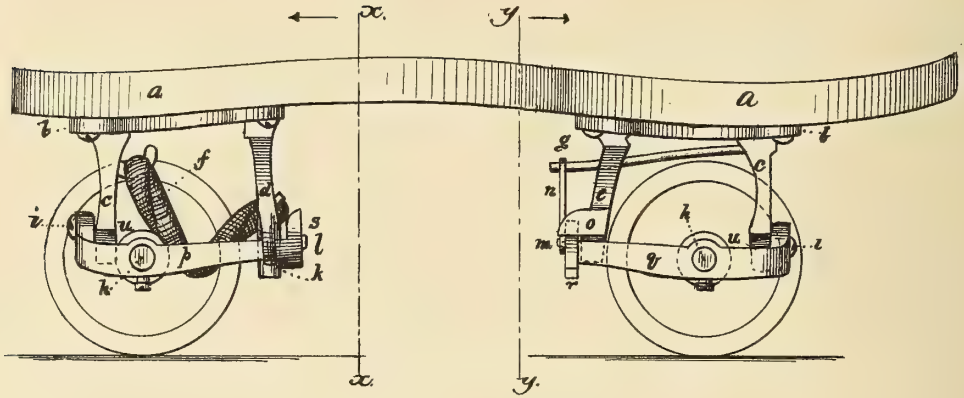


Fig. 2.

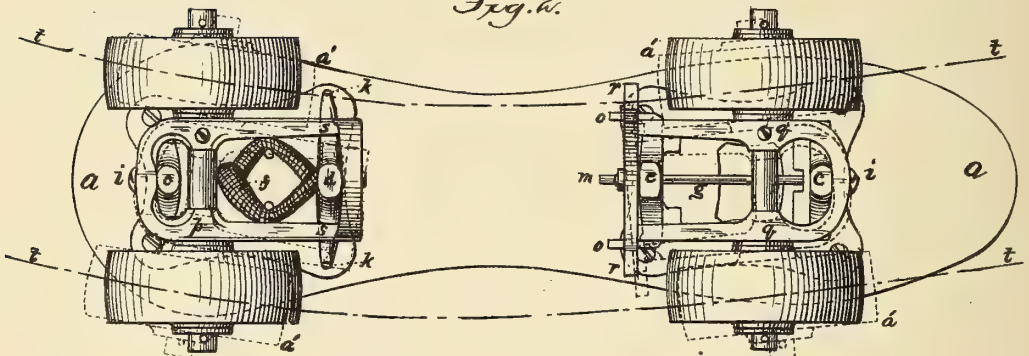


Fig. 3.

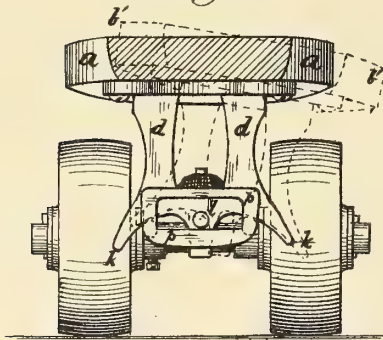
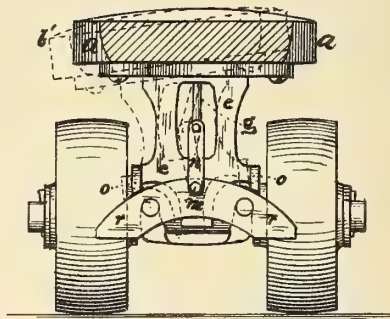


Fig. 4.



Witnesses;

Geo. H. Graham.
James A. Hudson

Inventor;

Hans Lumbye

UNITED STATES PATENT OFFICE.

HANS LUMBË, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **197,385**, dated November 20, 1877; application filed August 28, 1877.

To all whom it may concern:

Be it known that I, HANS LUMBË, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Parlor or Roller Skates, which improvement is fully set forth in the following specification and the accompanying drawing, in which—

Figure 1 is a side elevation of a parlor or roller skate, two of the wheels being removed to more plainly show the general construction. Fig. 2 is a bottom view or inverted plan of the same, with dotted lines showing relative changes of position of the several parts incident to a change of inclination of the foot-board, and also the consequent change of the line of direction of the skate. Fig. 3 is a section in the dotted line *x x* in Fig. 1, in the direction indicated by the arrow; and Fig. 4 is a section in the dotted line *y y*, Fig. 1, in the direction indicated by the arrow.

The object of my invention is to furnish a skate so constructed that either when running forward or backward its line of direction may be changed at the pleasure of the wearer simply by inclining the foot-board to the right or left, according to the change of direction desired; and it consists in the combination, with the segment of a circle placed at one end of the supporting-frame or of the axle-frame, of travelers on the corresponding end of the other of such frames, operating on such segment of circle to automatically give to the axle-frame the desired adjustability of position with reference to a pivotal point at which such frames are attached together, as shown in the drawing, and hereinafter fully described.

Two forms of construction are shown in the figures; but the variance consists merely in the details of construction, the principle of operation being the same in both.

In the figures, *a a* is the foot-board, to which the supporting-frames *b b* with their depending arms *c, d*, and *e* are attached. The arms *c* are the same in both forms of construction shown. *p* and *q* represent two forms of the axle-frame. Upon *p* are formed travelers or bearing-surfaces *s s*, to move upon the surfaces of the segments of circles *k k*, with which the end of the arm *d* is provided, as shown in Fig. 3; while in the other form of construction, as

shown in Fig. 4, travelers or bearing-surfaces *o o* are formed upon the lower end of the arm *e* to move upon and follow the line of a segment of a circle, *r*, attached to the axle-frame *q*. *i* is a pivotal point, at which the supporting-frame and the axle-frame are connected. *f*, in Figs. 1, 2, and 3, is an elastic strap attached to and operating upon the supporting-frame and the axle-frame, its office being to hold the travelers *s s* against the curved surfaces *k k* when the skate is lifted up, and also to restore the parts to their normal relative positions when the lateral pressure is removed; and *g*, in Figs. 1, 2, and 4, is a steel spring connected to the axle-frame at *m* by the link *n*, for the same purpose in that form of construction.

It is obvious that the forms as well as the positions of these springs may be varied.

The dotted lines *a* in Fig. 2 show the relative change of the parts when the foot-board is inclined to the right, and the dashed lines *t* in same figure show the result and change in the line of direction incidental thereto; while the dotted lines *b'*, in Figs. 3 and 4, show the relative change of parts when the foot-board is inclined. *u* in Fig. 1 is a shoulder on the arm *c*, and serves as a stop to the axle-frame *p* and *q*, and prevents the wheels from coming in contact with the foot-board, as would be the result of too great an inclination of the foot-board were no stop provided; but this stop may be dispensed with, if desired, for another is obtained at or near the other end of the axle-frame by its contact on excessive inclination of the foot-board with the standard *e*, Figs. 1, 2, and 4, and by the addition of the pin *l* and slot in *p p* and projection *d*.

The operation is as follows: When a skate provided with my new combination for its running-gear stands in position for use without any lateral pressure upon its foot-board, the springs hold the axle-frames against the supporting-frames, the travelers rest upon the curved surfaces described, and the axles lie parallel with each other in a plane parallel to the plane of the foot-board, and at right angles to its major axis.

If a forward or backward impetus be given to the skate while its several parts occupy toward each other the relative positions de-

scribed, its line of direction will be coincident to the line of the major axis of the foot-board. If the foot-board be inclined to either side, the crowding of the travelers upon the curved surfaces described will force those ends of the axle-frames over toward the other side, and, the other ends of those frames being held at the pivotal points *c*, the axles will assume toward each other the relative positions of radii of a circle, the center of which will be in the direction of the inclination of the foot-board, and the line of direction will be the circumference of such circle, the extent of which is determined by the angle of inclination.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The supporting-frame *b*, provided with the dependent arms *c* and *d*, and attached to the foot-board *a*, in combination with the axle-frame *p*, all constructed and arranged to op-

erate substantially as shown and described, for the purpose set forth.

2. The supporting-frame *b*, provided with the dependent arms *c* and *e*, and attached to the foot-board *a*, in combination with the axle-frame *q*, provided with the segment of circle *v*, all constructed and arranged to operate as shown and described, for the purpose set forth.

3. The method herein shown and described for securing an automatic relative adjustment of the foot-board and running parts of the skate on inclination of the foot-board by means of axial arms, having a curved surface, and travelers to move upon and follow such curve at one end of such frames, and a union of the frames by a pivotal point at their other ends.

HANS LUMBËE.

Witnesses:

H. M. WHITBECK,
JAMES A. HUDSON.

S. A. ALLEN.
Roller-Skates.

No. 199,009.

Patented Jan. 8, 1878.

Fig: 1.

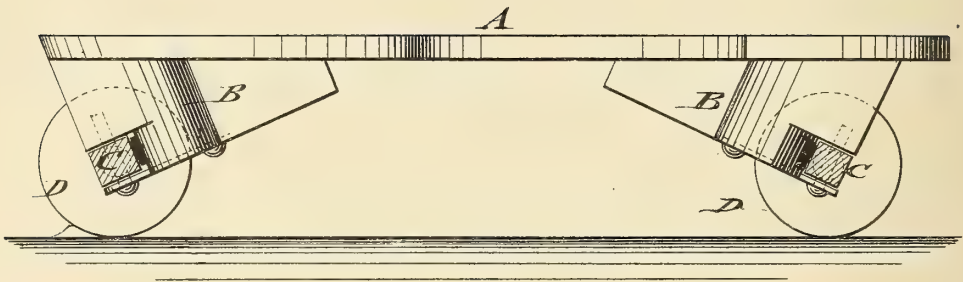
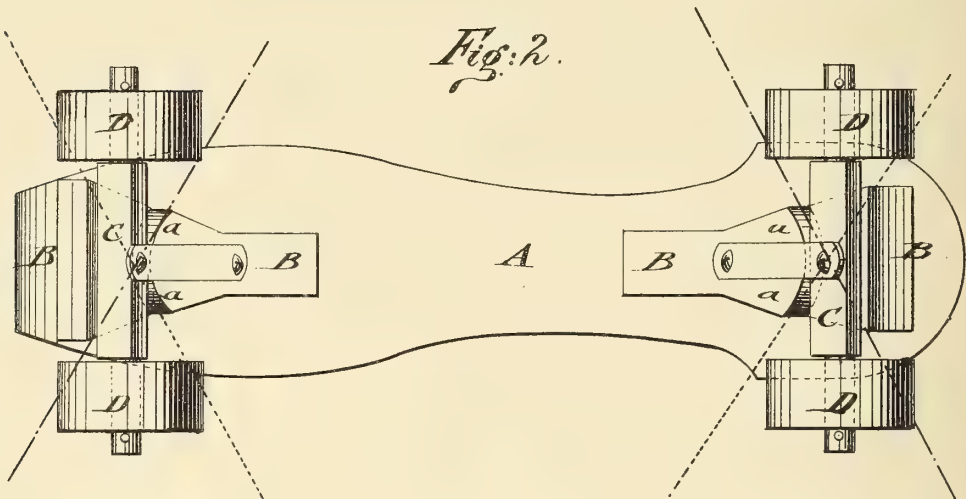


Fig: 2.



WITNESSES:

Chas. Nida
J. H. Scarborough.

INVENTOR:

S. A. Allen.

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

SILAS A. ALLEN, OF NEW YORK, N. Y.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **199,009**, dated January 8, 1878; application filed November 22, 1877.

To all whom it may concern:

Be it known that I, SILAS A. ALLEN, of the city, county, and State of New York, have invented a new and Improved Parlor-Skate, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a sectional side view, and Fig. 2 a bottom view, of my improved parlor-skate.

Similar letters of reference indicate corresponding parts.

This invention has reference to an improved parlor-skate, by which the curves may be rounded with great facility by the peculiar mounting of the roller-shafts to the hangers of the sole and heel plate; and the invention consists of the combined sole and heel plate, having solid triangular bottom pieces, which are recessed to form arc-shaped cheeks, along which the roller-shafts, that are pivoted to the center of the recessed pieces, swing, to admit, by the rocking of the sole and heel plates, the converging of the roller-shafts and the rounding of curves.

Referring to the drawing, A represents the combined sole and heel plate, and B the triangular bottom pieces, which are secured thereto in such a manner that the apex of each triangle extends downward, and the base forms contact with the under side of the sole and heel plate A.

The bottom pieces B are arranged on the sole and heel plate A in symmetrical position to the transverse axis of the skate, the apex of each bottom piece being rectangularly recessed for the shaft C of the supporting-rollers D.

The shafts of the front and rear sets of rollers are centrally pivoted to the recessed bottom pieces, the front shaft swinging at the front part of the recessed front piece B, and the rear shaft at the back part of the rear piece B.

Both shafts C bear against arc-shaped convex cheeks *a* of the bottom pieces B, and swing readily thereon from one side to the other,

forming an oblique angle with the longitudinal axis of the sole and heel plate, at one side or the other of the same.

Intermediate cushioning-blocks between the shaft and convex cheeks render the contact noiseless and facilitate the working of the shafts.

The inclined upper sides of the rectangular recesses of the bottom pieces B slide on the roller-shaft when the sole and heel plate is rocked by the foot to either side, so as to throw thereby the pivoted shaft at convergent angles to one side or the other of the longitudinal axis, according to the degree of side inclination given to the sole-plate, so as to admit thereby the easy and convenient rounding of curves by the rollers, and secure the corresponding position of the roller-shafts to each other by the greater or less inclination of the sole and heel plate.

The pivoted roller-shafts facilitate thus, in connection with the recessed triangular bottom pieces, the use of the skates for turning curves by a simple and cheap arrangement.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with plate A, of centrally-pivoted roller-shaft C and hangers B, having cheeks *a a*, as shown and described, whereby the plate is tilted and the shafts oscillated, as set forth.

2. In parlor-skates, the combined sole and heel plate, having triangular bottom pieces or hangers, with recessed pieces and convex cheeks, in combination with the centrally-pivoted roller-shafts, swinging in the recesses along the convex cheeks, all constructed and arranged for operation substantially as specified.

SILAS A. ALLEN.

Witnesses:

PAUL GOEPEL,
ALEX. F. ROBERTS.

E. ROBINSON.
Roller-Skates.

No. 199,664.

Patented Jan. 29, 1878.

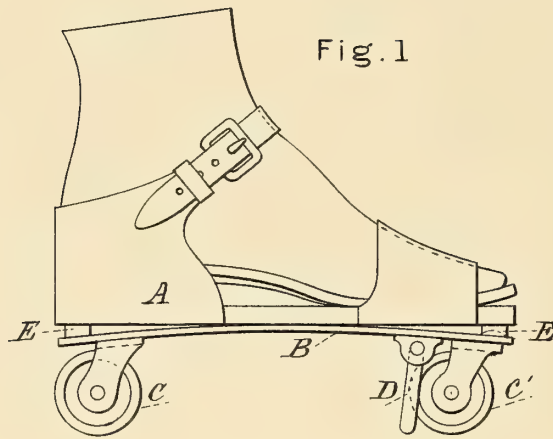
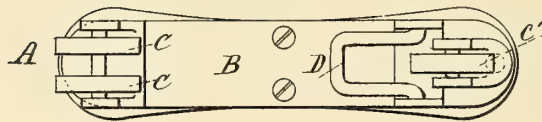


Fig. 2.



WITNESSES.

Edward D. Macintosh.
R. W. Macintosh

Edward Robinson
by Chas E L. Jellicoff Atty
INVENTOR.

UNITED STATES PATENT OFFICE.

EDWARD ROBINSON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **199,664**, dated January 29, 1878; application filed April 12, 1877.

To all whom it may concern:

Be it known that I, EDWARD ROBINSON, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Roller-Skates, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side view. Fig. 2 is a bottom view.

Like letters in all the figures refer to the same parts.

My invention consists in so constructing a roller-skate that it may be capable of being operated or rolled over a rough or uneven surface or street-pavement, and of being prevented from rolling backward while ascending a hill or incline.

In the drawings, Figs. 1 and 2, A is a common skate-top, (with its customary straps and fastenings,) made of wood, metal, or any other material, to the under side of which is fastened, by means of any suitable device, a spring, B. To the outer ends of said spring B are formed or attached thereto bearings and rollers *c c'*, roller *c'* being capable of swiveling in the same way as furniture-casters, and is what I term a "pilot-wheel." Between the top A and the outer end of spring B, I place cushions E, of rubber or any other suitable material, so as to assist spring B to receive the shock occasioned by rolling over uneven surfaces or street-pavements; but I do not deem it really essential to the use of my invention, as I believe the spring B to be fully sufficient for the purpose desired.

Attached to said spring B by means of bearings, I place a swinging or movable link, D, so

constructed that it may be swung downward and catch under roller or pilot-wheel *c'*, thereby blocking said wheel should it undertake to roll backward while the operator is ascending a hill or incline, which checking device also gives him a foot-hold while making such ascension, which is very desirable.

I know that this same result of blocking or keeping the rollers from revolving can be accomplished by means of a pawl and ratchet, or other equivalent device, fastened to any or either of the rollers; but I deem the link preferable, as being the more simple in operation, and more easily and cheaply made.

Now, the operation of my invention is simply to fasten the skate to the foot of the operator by means of the customary straps and fastenings used in skates, and it is then rolled over the rough pavement on the sidewalks of the streets (which it is specially designed to accomplish) in the manner of skating, the spring and cushions receiving any shock that might occur therefrom, and the swinging link keeping the skater from rolling backward, it being a complete blocker of the rollers from a backward motion.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

In a roller-skate, the combination of the top A, rollers *c* and *c'*, and link or checking device D, substantially as described, and for the purpose specified.

EDWARD ROBINSON.

Witnesses:

CHAS. E. L. JELLIFFE,
THOMAS BINNS.

J. FORSYTH.
Roller-Skate.

No. 200,186.

Patented Feb. 12, 1878.

Fig: 1.

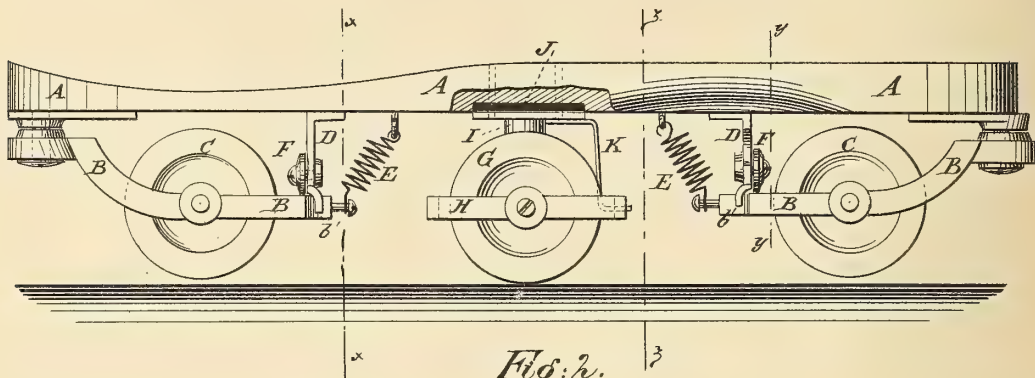


Fig: 2.

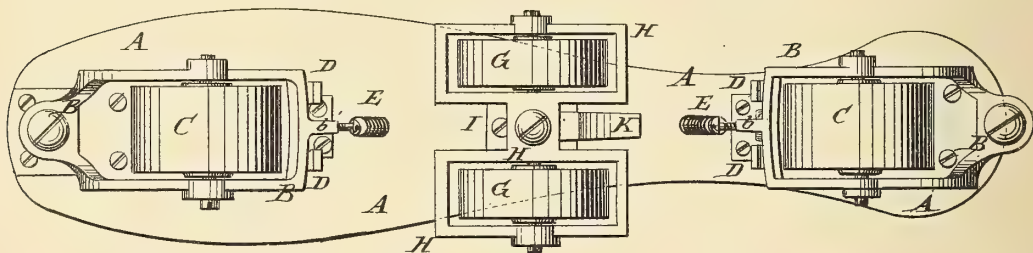


Fig: 3.

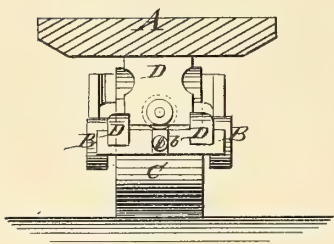


Fig: 5.

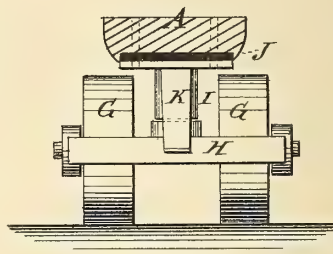
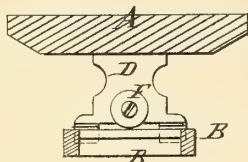


Fig: 4.



WITNESSES :

WITNESSES:
Chas. Nida.
J. H. Scarborough.

INVENTOR:

INVENTOR.
J. Forsyth.
BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES FORSYTH, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND JOHN P. HOUGHTON, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **200,186**, dated February 12, 1878; application filed November 30, 1877.

To all whom it may concern:

Be it known that I, JAMES FORSYTH, of the city, county, and State of New York, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification:

Figure 1 is a side view of one of my improved skates, part being broken away to show the construction. Fig. 2 is a bottom view of the same. Fig. 3 is a cross-section of the same, taken through the line *xx*, Fig. 1. Fig. 4 is a cross-section of the same, taken through the line *yy*, Fig. 1. Fig. 5 is a cross-section of the same, taken through the line *zz*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish roller-skates so constructed that the operator may guide the skate forward, backward, or diagonally in any direction by tipping the foot forward or backward, and without rocking or oscillating the foot.

The invention will first be described in connection with the drawing, and then pointed out in the claims.

In the drawing, A represents the block or foot-plate of the skate, to the lower side of the ends of which are pivoted the outer ends of the caster-frames B. To the side bars of the frame B are pivoted the caster-rollers C, and upon the inner ends of said frames are formed projections or arms *b'*, which rest in long notches in the lower ends of the standards D. The upper ends of the standards D are attached to the block or plate A. To the ends of the arms *b'* are attached the lower ends of spiral springs E, the upper ends of which are attached to the block or foot-plate A, so as to hold the inner ends of the caster-frames B up against the standards D. The friction between the caster-frames B and the standards D is relieved by a small wheel, F, pivoted to the inner sides of the said standards D, so as to bear against the upper sides of the end bars of the caster-frames B.

G are the intermediate rollers, one or two of which may be used, and which are pivoted to a frame, H. The frame H is swiveled to the lower end of a standard, I, the upper end

or base of which is attached to the middle part of the block or foot-plate A.

J is a rubber block interposed between the base of the standard I and the block or plate A. K is a stop attached to the standard I, or block or foot-plate A, to limit the movement of the swiveled frame H.

The standard I should be of such a length that the intermediate roller or rollers G may project a little lower than the end rollers C, so that the operator, by tilting his foot forward or backward, may throw his weight upon the intermediate and forward rollers, or upon the intermediate and rear rollers, as desired, and may guide himself in any desired direction—forward, backward, or diagonally—without any danger of his skates throwing him.

The rubber block J is compressed when the skater throws his whole weight upon the intermediate rollers, and thus brings the said intermediate rollers nearer to a level with the end rollers. The rubber block J expands when the weight is thrown forward or backward upon the end rollers, and increases the difference in height between the said end rollers and the intermediate rollers, thus making the changes more easy and gradual, and preventing any jar or shock.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with swiveled front and rear rollers C, of intermediate rolls G, journaled in a swiveled frame and projecting a little lower than the end rolls, as and for the purpose described.

2. The roller-frame B, swiveled at one end to the end of foot-plate A, and at the other end connected by arm *b'* and spring E with the foot-plate A, as set forth.

3. The combination of the swiveled frame H and the stationary standard I with the intermediate roller or rollers G and the foot block or plate A, substantially as herein shown and described.

4. The combination of the stop K, with the swiveled frame H of the intermediate roller or rollers G and the foot block or plate A, substantially as herein shown and described.

5. The combination of the rubber block J

with the standard I, to which the frame H of the intermediate roller or rollers G is swiveled, and with the foot block or plate A, substantially as herein shown and described.

6. The standard D, depending from plate A, and provided with notches in the lower part that receive a rear arm, *b'*, of the roller-frame B, as shown and described.

7. The combination of the friction-rollers F with the standards D and the swiveled frames B of the caster-rollers C, substantially as herein shown and described.

JAMES FORSYTH.

Witnesses:

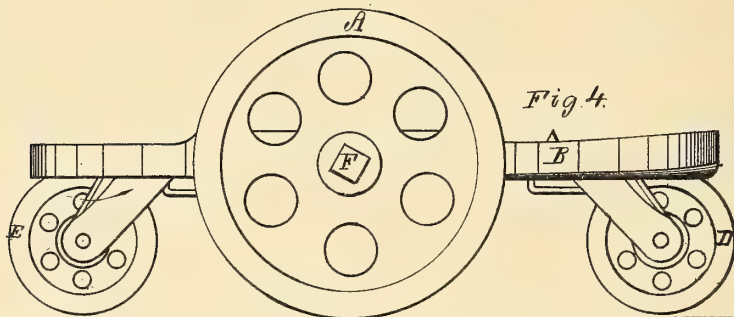
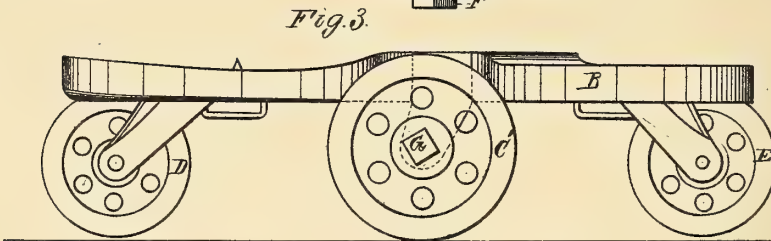
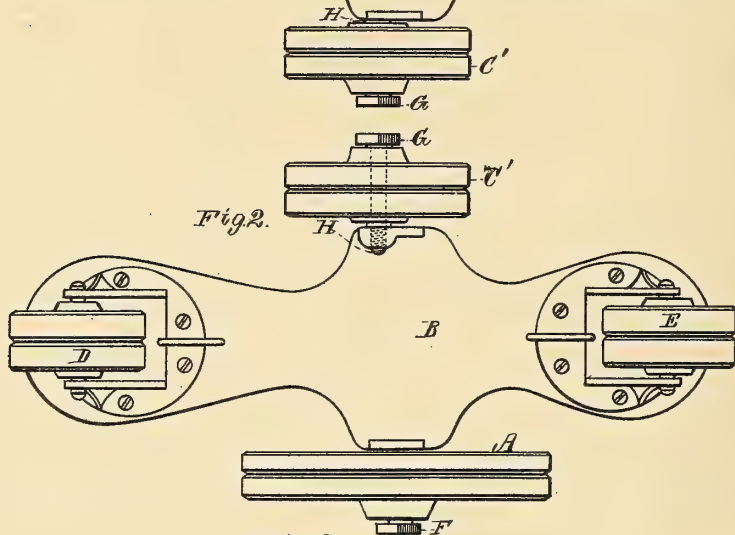
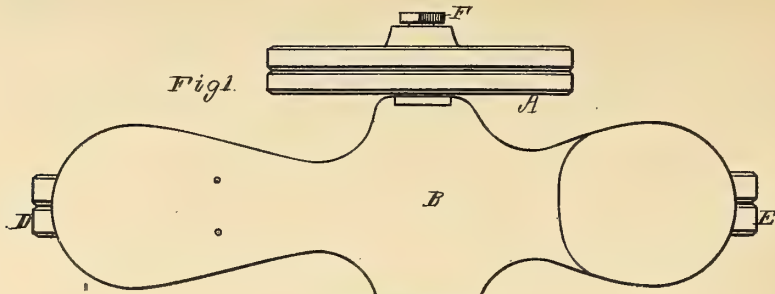
JAMES T. GRAHAM,

C. SEDGWICK.

W. P. GREGG.
Roller-Skates.

No. 208,234.

Patented Sept. 24, 1878.



Witnesses.

John R. Snow
John O. Sullivan

Inventor.

Washington Parker Gregg

UNITED STATES PATENT OFFICE.

WASHINGTON P. GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **208,231**, dated September 24, 1878; application filed June 20, 1878.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the nature of my said invention and the manner in which it is to be performed to be fully described in the following specification, reference being had to the accompanying drawings, which make a part thereof.

My present invention is an improvement on roller-skates, in which a large middle driving-wheel is used on each side of the skate-stock, as in my patent of July 25, 1865, and on skates in which a large middle wheel is placed on the outside of the stock, and a small wheel under the inside of the middle of the stock.

Skates of these kinds answer well for novices and for most proficient; but it is desirable for athletes and professionals that a middle wheel should be employed at the inner side of the stock, somewhat larger than the comparatively small one under it, without raising the stock higher than it would be with such smaller wheel under it; therefore I have made the improvements hereinafter described.

My present invention consists in a novel construction, arrangement, or combination of the wheels, rollers, and stock of the skate, as hereinafter set forth.

The accompanying drawings exhibit a skate embodying my present improvements.

Figure 1 is a top view of the skate with a large middle wheel on the outer side of the stock and a medium-sized wheel with its axle-head at the inner side of the stock. Fig. 2 is a bottom view of the skate with the large middle wheel on the outer side of the stock, and the medium-sized middle wheel with its axle at the inner side of the stock. Fig. 3 is a side view of the skate with its toe and heel rollers and medium-sized middle wheel. Fig. 4 is a side view of the skate with its toe and heel rollers and large middle wheel and axle-head.

In carrying out my invention, as shown in Figs. 1 and 2, I arrange one comparatively large middle wheel, A, for side support, driving, and turning, on the outer side of the stock B, near the ankle, and one smaller or

medium-sized middle wheel, C', for side support, driving, and turning, at, but not under, the inner side of the stock, opposite, or nearly opposite, to the larger middle wheel, A, the upper part of the rim of the medium-sized wheel C' being even, or nearly even, with the upper surface of the stock, and the lower part of the rim of the medium-sized wheel C' being as low down as the lower part of the rim of the middle wheel, A.

By thus making the inner middle wheel less in diameter than the outer one, and arranging it at the inner side of the stock, the skate becomes easier of application to and removal from the foot, and interference of the inner wheels with each other when the skates may be in use is not only lessened, but substantially obviated, so far as concerns athletes and professionals, who thereby have an inner middle wheel larger in diameter than they could have under the inner side of the stock without raising the stock higher from the ground.

With the middle wheels arranged and constructed as set forth, I combine one small roller, D, under the toe, and one small roller, E, under the heel of the stock, to support the heel and toe. Each middle wheel should extend down from the stock at least as low as the end rollers, and generally a little lower than the end rollers, to facilitate driving and turning. There may be two rollers instead of one under the heel or toe of the stock, when desired.

The skate is made to be used either with its stock, toe and heel rollers, and medium-sized middle wheel, as shown in Fig. 3, for the left foot, or with its stock, toe and heel rollers, and large middle wheel, as shown in Fig. 4, for the right foot, said middle wheels being made detachable, for the purpose of being dispensed with at pleasure, by turning back and removing the axle G H and axle F, suitably arranged for the purpose. Each middle wheel having its separate axle may have its lower bearing a little nearer than that of the other middle wheel toward the toe or heel of the stock. In general the hub of each middle wheel is a little shorter on one side of the wheel than the hub on the other side, the shortest hub to be used next to the stock for a narrow foot, and the longest next to the stock for a wider foot.

The stocks, wheels, rollers, fixtures, and fastenings may be of any suitable materials and size or desirable patterns.

The rims may be flat or rounded, and also covered with hardened leather, rubber, or other suitable substances.

As there are various ways of fastening axles to the stocks or foot-rests, I do not confine myself to any particular way. Some axles I fasten to the upper, some to the lower, surface of the stock, and some to the sides, or to brackets below or above the stock, according to the diameter or position of the wheels or rollers.

These skates are intended for all suitable surfaces, indoors and out.

Having described my invention, I claim as follows:

In roller-skates, a large middle wheel arranged on the outer side of the stock, in combination with a smaller middle wheel arranged at the inner side of the stock, substantially as and for the purposes described.

In witness whereof I, the said WASHINGTON PARKER GREGG, have hereunto set my name, at said Boston, on this 22d day of May, 1878.

WASHINGTON PARKER GREGG.

Witnesses:

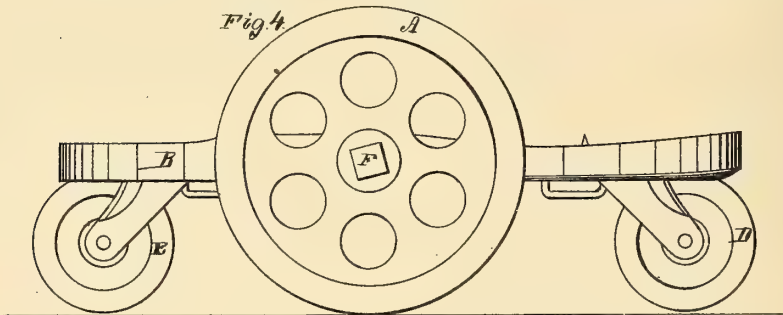
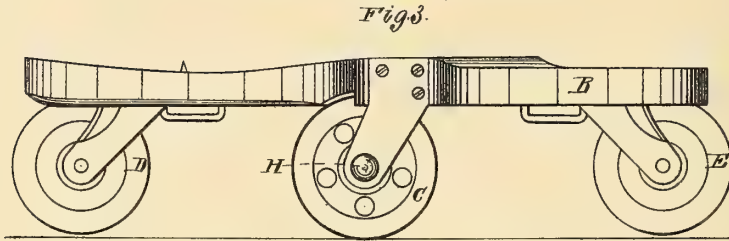
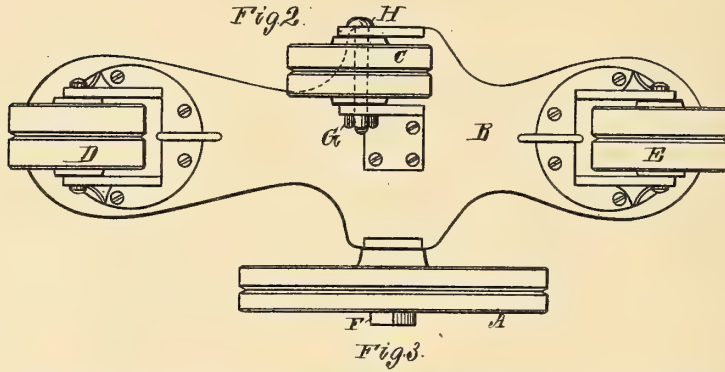
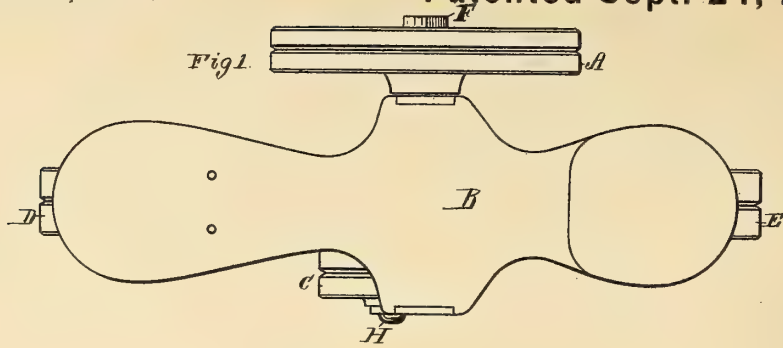
JOHN R. SNOW,

JOHN O. SULLIVAN.

W. P. GREGG.
Roller-Skates.

No. 208,235.

Patented Sept. 24, 1878.



Witnesses.

L. W. Miller

John R. Snow

Inventor.

Washington Parker Gregg

UNITED STATES PATENT OFFICE.

WASHINGTON P. GREGG, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **208,235**, dated September 4, 1878; application filed February 20, 1878.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the nature of my said invention and the manner in which it is to be performed to be fully described in the following specification, reference being had to the accompanying drawings, which make a part thereof.

The introduction of my roller-skates, patented July 25, 1865, with one large middle driving-wheel on each side of the stock, notwithstanding their merits, being retarded by objections against the size of the wheels, and liability of the inner side wheel of one skate to interfere with that of the other skate while in use, I have made the improvements herein described.

My present invention consists in a novel construction, arrangement, or combination of the wheels, rollers, and stock of the skate, as herein set forth.

The accompanying drawings exhibit a skate embodying my improvements.

Figure 1 is a top view of the skate with a large middle wheel on the outer side of the stock, and a smaller middle wheel under the inner side of the stock. Fig. 2 is a bottom view of the skate with a large middle wheel on the outer side of the stock, and the smaller middle wheel, its axle, and nut under the inner side of the stock. Fig. 3 is a side view of the skate with its toe and heel rollers and small middle wheel. Fig. 4 is a side view of the skate with its toe and heel rollers and large middle wheel and axle-head.

In carrying out my invention, as shown in Figs. 1 and 2, I arrange one comparatively large middle wheel, A, for side support, driving, and turning, on the outer side of the stock B, near the ankle, and one smaller middle wheel, C, for side support, driving, and turning, under the inner side of the stock, opposite, or nearly opposite, to the larger middle wheel, A, and so that the lower part of the rim of one middle wheel may be as low down as the lower part of the rim of the other middle wheel.

By making the inner middle wheel much less in diameter than the outer one, and arranging it under the inner side of the stock, the skate becomes easier of application to or removal from, the foot, and interference of the inner wheels with each other when the skates may be in use is obviated.

With the middle wheels constructed and arranged as set forth I combine one small roller, D, under the toe, and one small roller, E, under the heel of the stock, to support the heel and toe.

Each middle wheel should extend down from the stock at least as low as the end rollers, and preferably a little lower than the end rollers, to facilitate driving and turning. There may be two rollers instead of one under the heel or toe of the stock, when desired.

The skate is capable and designed to be used either with its stock, toe and heel rollers, and small middle wheel, as shown in Fig. 3, for the left foot, or with its stock, toe and heel rollers, and large middle wheel, as shown in Fig. 4, for the right foot, each middle wheel being made detachable, for the purpose of being dispensed with at pleasure, by turning back and removing the axle F or nut G and axle H, suitably arranged for the purpose. Each middle wheel having its separate axle may have its lower bearing a little nearer than the other middle wheel toward the toe or heel of the stock.

The stocks, wheels, rollers, fixtures, and fastenings may be of any suitable materials and of any desirable patterns.

The rims may be flat or rounded, and also covered with hardened leather, rubber, or other suitable substances.

As there are various ways of fastening axles to the stocks or foot-rests, I do not confine myself to any particular one. Some axles I fasten to the upper, some to the lower, surface of the stock, and some to the sides, or to brackets below or above the stock, according to the diameter or position of the wheels or rollers.

These skates are intended for all suitable surfaces, indoors and out. Thus it will be seen that the diameter of one middle wheel is reduced on the inner side of each skate, that the

liability to interfere is avoided or lessened, and that I can still employ on the outside of the skate a middle wheel large in diameter.

Having described my invention, I claim as follows:

1. In roller-skates, a large middle wheel arranged on the outer side of the stock, in combination with a smaller middle wheel arranged under the inner side of the stock, substantially as set forth.

2. A middle wheel arranged under the outer side of the skate, having wheels or rollers at each end, substantially as and for the purposes described.

3. A large middle wheel arranged on the outer side of the skate, in combination with smaller wheels or rollers at each end, substantially as and for the purposes described.

4. Detachable middle wheels and their fixtures arranged with the stock, substantially as and for the purposes set forth.

WASHINGTON PARKER GREGG.

Witnesses:

L. N. MÖLLER,
JOHN R. SNOW.

J. H. BOWEN.
Roller-Skates.

No. 208,508.

Patented Oct. 1, 1878.

Fig. 1.

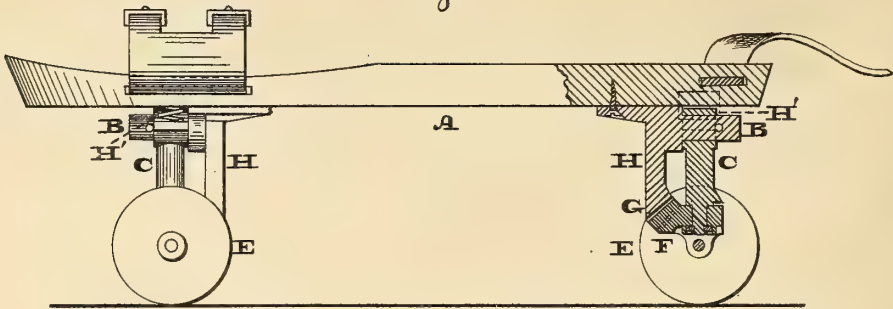


Fig. 2.

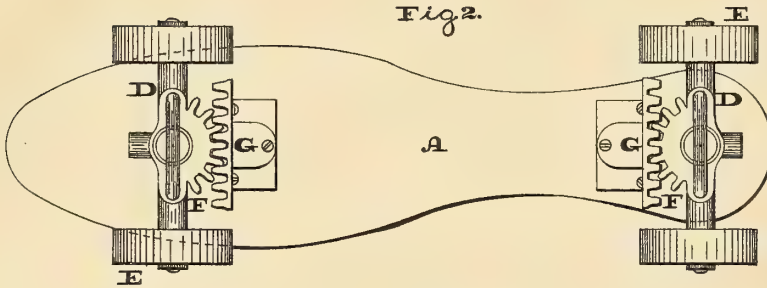
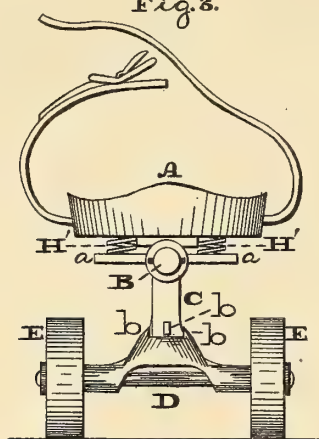


Fig. 3.



Witnesses:

Ac. P. Grant,

W. S. Fischer

Inventor:

James H. Bowen,

by John A. Diederichsen
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES H. BOWEN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **208,508**, dated October 1, 1878; application filed June 4, 1878.

To all whom it may concern:

Be it known that I, JAMES H. BOWEN, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Roller-Skates, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation, partly sectional, of the skate embodying my invention. Fig. 2 is a bottom view thereof. Fig. 3 is a front view thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to a roller-skate whose rollers or wheels are mounted on axles, which may be readily turned laterally by the weight of the body thrown to the side, so as to change direction of skating.

I employ horizontally-arranged spindles, which rotate on vertical posts, to whose lower ends are journaled the axles of the rollers, the hubs whereof are formed with toothed segments, which engage with toothed segments suspended from the foot-rest, whereby, as the foot-rest is inclined, motion is imparted to the suspended segments, which, gearing with the toothed segments of the axles, cause the latter to turn from their right-angular positions, and thus change the direction of the skate laterally, as desired, the construction and operation of parts being hereinafter more fully set forth.

Referring to the drawings, A represents the tread or foot-rest of the skate, which is provided with straps or other suitable fastenings. B represents spindles, which are secured to the under side of the rest, and project horizontally in opposite directions. C represents vertical posts, whose upper ends are mounted on the spindles B, and to their lower ends there are journaled the axles D of the rollers E.

A portion of the hub of each axle D has formed with or secured to it a toothed segment, F, which meshes with a toothed segment, G, on a vertical arm, H, suspended from the foot-rest.

It will be noticed that the segments F pro-

ject horizontally in opposite directions. On the upper ends of the posts C there are laterally-projecting wings *a*, between which and the foot-rest there are interposed coiled rubber or other springs H', which are secured in position in any proper manner.

When the skating is straightforward, the front and rear axles are parallel or at right angles to the length of the foot-rest. When, however, it is desired to change direction laterally or describe a curve, the body of the skater is thrown to the relative side. This inclines the foot-rest, and consequently the arms H; the segments G whereof, meshing with the segments F of the axles, turn the latter from their right-angular position, the effect of which is to cause the two axles to assume different angles, so that the rollers on one side approach each other, and those on the opposite side recede from each other, whereby, while the rollers remain on the ground or floor, their paths of motion are changed to the right or left relatively to the incline imparted to the body in the direction desired to proceed.

When the body is again brought upright, the rollers assume their normal positions, the springs H' assisting the operation, and the skating will be due ahead or forward. The springs H' also provide a cushion between the foot-rest and rollers, and intermediate parts for preventing strain thereon and easing the operation of skating.

In order to limit the swing of the axles, stops *b b b* are formed on proper parts of the hubs of the axles and the posts C, which are so disposed that the axles may move to the requisite extent without, however, swinging or turning dangerously.

If desired, each axle may have a single wheel arranged centrally on it, in lieu of two wheels on the ends of the same; but the operation will be the same in either case.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The foot-rest having horizontal spindles B and vertical arms H, with toothed segments G, in combination with vertical posts C, mount-

ed on the spindles, the springs H', and axles D, journaled to said posts, and having toothed segments F, which engage with the segments of said arms, constructed and arranged substantially as and for the purpose set forth.

2. The arms and spindles H B, vertical posts C, swinging axles D, and segmental

gearing F G, in combination with the stops *b b*, arranged to operate substantially as and for the purpose set forth.

JAMES H. BOWEN.

Witnesses:

GEO. B. WILKINSON,

JOHN A. WIEDERSHEIM.

E. F. WESTON.
Skate.

No. 210,730.

Patented Dec. 10, 1878.

Fig. 3.

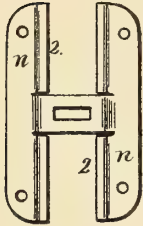


Fig. 2.

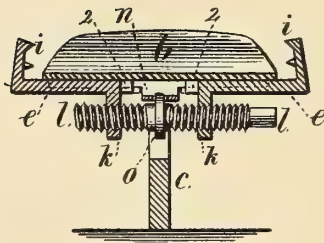
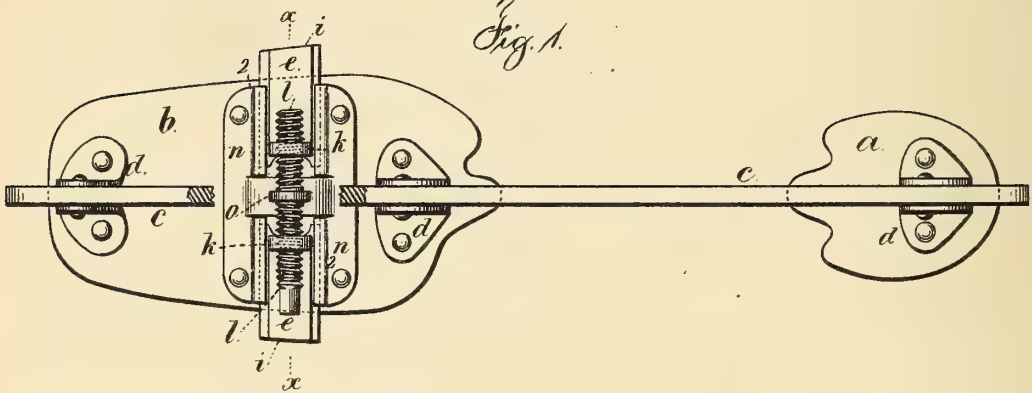


Fig. 1.



Witnesses

Chas. H. Smith
Geo. T. Puckney

Inventor

Ephraim J. Weston.

per Lemuel W. Ferrell
Atty.

UNITED STATES PATENT OFFICE.

EPHRAIM F. WESTON, OF WOLCOTTVILLE, CONNECTICUT, ASSIGNOR TO
UNION HARDWARE COMPANY, OF SAME PLACE.

IMPROVEMENT IN SKATES.

Specification forming part of Letters Patent No. **210,730**, dated December 10, 1878; application filed
August 23, 1878.

To all whom it may concern:

Be it known that I, EPHRAIM F. WESTON, of Wolcottville, in the county of Litchfield and State of Connecticut, have invented an Improvement in Skates, of which the following is a specification:

Skates have been made with clamps for grasping the edges of the sole, and these clamps have been placed within slides upon the under surface of the sole-plate, and have been moved in and out by a screw, having right and left hand threads toward its ends, passing through nuts upon the stocks or body portions of the clamps. The screw has also had a central flange to prevent end motion.

My invention relates to the plate that is attached to the under side of the sole-plate, and forms the slide for the clamps, and also retains the screw endwise, and at the same time it strengthens the sole-plate transversely. This plate being made in one piece is easily applied and secured, and retains all parts of the clamping apparatus in their proper relative positions, whereas in the skates heretofore made there are numerous separate flanges and holding devices that require considerable time and skill to properly apply them, and they do not hold the parts firmly in their proper relative positions.

In the drawing, Figure 1 is an inverted plan of the skate, with part of the runner removed. Fig. 2 is a cross-section through the sole-clamps at the line *x x*, Fig. 1; and Fig. 3 is a detached view of the plate forming the slides for the clamps.

The heel-plate *a*, sole-plate *b*, runner *c*, and brackets *d* are all of the ordinary character. The sole-clamps *e* are provided with the vertical clamping-hooks *i* for clamping the edges of the sole, and with nuts or projections *k* for the screw *l*, by means of which the clamps are expanded or contracted.

The parts thus far described have before been made, and hence are not claimed alone.

In order to attach the clamps to the under side of the sole-plate, I make use of the plate *n*, that is similar in shape to the letter **H**. The portions 2 2 are raised at their inner edges to form slides, within or between which the body portion of the sole-clamps *e* move freely back and forth by the action of the screw *l*.

The center-piece of this plate is made with a mortise or depression to receive the edge of the central flange *o* upon the screw *l*, and prevent any end motion to the screw, or to the clamps that are held by this screw. This plate *n*, extending across the sole-plate, and being all formed in one piece, strengthens the sole-plate. It insures freedom in the movement of the sole-clamps, and the parts being all directly held in their proper relative positions are not liable to become bent or distorted by the strain to which they are subjected when in use. This plate *n* is preferably made of sheet metal, cut out and stamped up by dies; but it may be of malleable cast-iron of the same shape, and receiving the parts in the manner before described.

I claim as my invention—

1. In combination with the transverse clamps of a skate and the actuating-screw thereof, the **H**-shaped plate *n*, forming the slides for both the clamps, and also holding the screw in position endwise, substantially as set forth.

2. In combination with the sole-plate, transverse sliding clamps, and the screw for operating the same, the plate *n*, extending across the sole-plate and receiving the sliding clamps, substantially as set forth.

Signed by me, this 23d day of August, A. D. 1878.

EPHRAIM F. WESTON.

Witnesses:

LEWIS M. JONES,
J. F. CALHOUN.

G. RUSH, Jr.
Roller-Skate.

No. 211,111.

Patented Jan. 7, 1879.

Fig. 1.

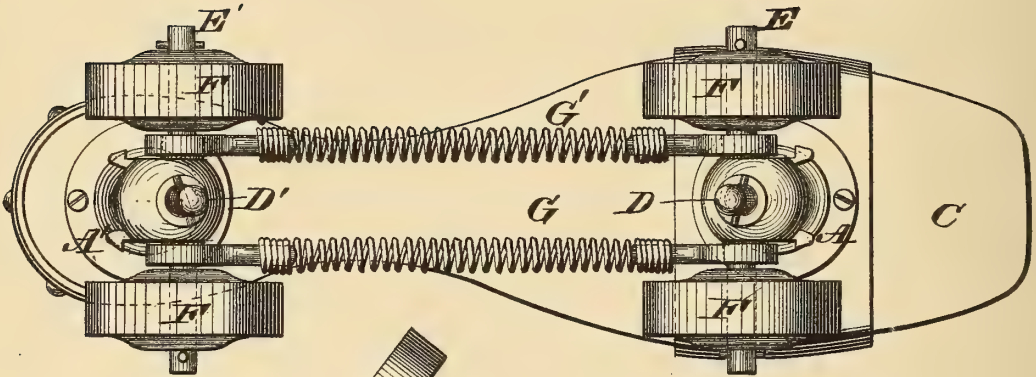
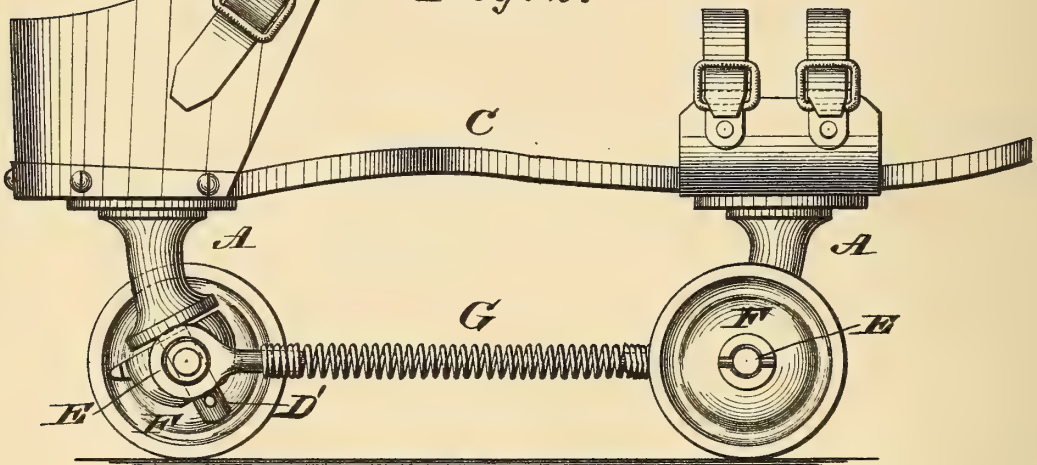


Fig. 2.



Witnesses:

W. H. D. D. D.
Frank H. Duffey.

Inventor:

George Rush Jr.
L. Lloyd Wiegand Attorney

G. RUSH, Jr.
Roller-Skate.

No. 211,111.

Patented Jan. 7, 1879.

Fig. 3.

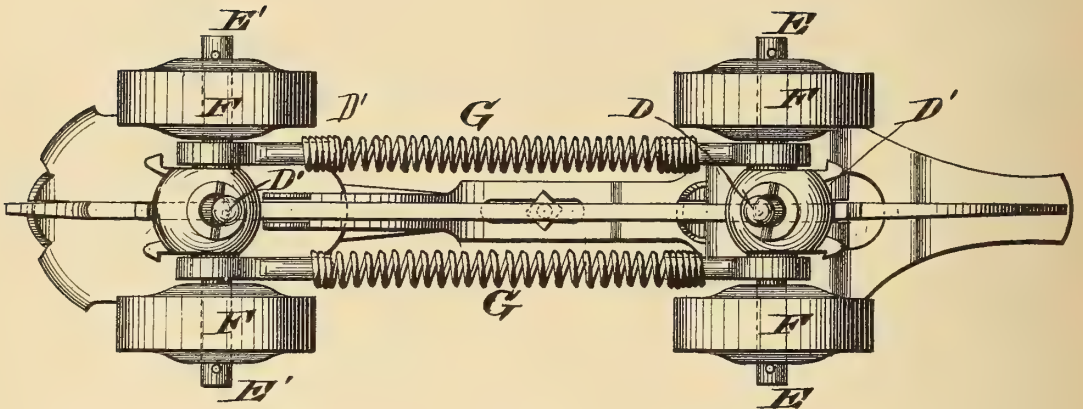
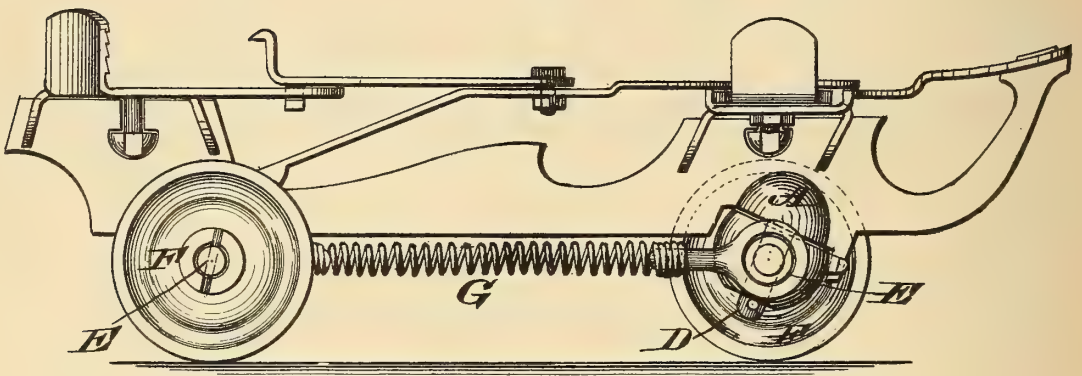


Fig. 4.



Witnesses:

P. C. Dietrich.
Frank H. Druffy.

Inventor:

George Rush Jr.

Per Lloyd Wiegand Attorney.

UNITED STATES PATENT OFFICE.

GEORGE RUSH, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **211,111**, dated January 7, 1879; application filed February 26, 1878.

To all whom it may concern:

Be it known that I, GEORGE RUSH, Jr., of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Roller-Skates; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable others skilled in the art to make and use the said invention.

The nature of my invention consists in the combination, with the body of a skate, of two pivot or journal bearings, so formed upon or attached to clamps adapted to be readily applied to and securely fastened on either a skate-runner or roller-skate sole that when thus fastened the axes of such journals shall be not parallel, but inclined toward each other, and when the sole is horizontal the axes shall be in a vertical plane. Upon each of the pivots or journals is placed an axle, bearing wheels near each end, and the two axles are coupled together by means of an elastic link or links, so that when the wheels roll in a curve both axles turn upon their pivots. This motion is restricted by an adjustment in the tension of the elastic links.

I will now proceed to describe more particularly the manner of making and using my invention, referring in so doing to the drawing annexed and the letters of reference marked thereon, the same letters applying to the same parts in the several figures.

Figure 1 is an inverted plan. Fig. 2 is a side elevation with one wheel removed. Figs. 3 and 4 show modifications.

A and A' represent bearings adapted to fit on the sole of a skate, C, which may be of metal, wood, vulcanized rubber, celluloid, vulcanized fiber, or other rigid light substances, those having slow conducting properties being preferable. D and D' are journals or pivots in the same vertical plane extending ob-

liquely downward from the bearings A and A', passing through and turning freely in the axles E and E'. F F F and F are wheels or rollers, turning freely upon the axles E and E'.

The axles E and E' are connected by links G and G', which are parallel with each other, as shown in Fig. 1, and attached to the axles E and E' at points between the wheels. Their function is to cause the axles E and E' to turn simultaneously on the pivots D and D' to a parallel position.

When the wheels rest upon a surface at right angles to the plane of the axes of the pivots D and D', the axles E and E' remain parallel. When the pivots are inclined either to the right or left, the axles are inclined to each other. By means of this action of the oblique pivots upon the axles the wearer is able to control the adjustment of the axles to each other, and cause the skate to either roll in right lines or curves in either direction, and of radii determined by the degree of inclination of the sole to the floor upon which the skate rolls.

I do not broadly claim roller-skates having the roller-axes attached to the soles by journals having oblique or inclined axes, such skates having been already used with such inclined journals supported on both sides of the axles; but,

Having described my invention and its mode of operation, what I claim as new therein is—

In a roller-skate having bearings rigidly attached to the sole, oblique journals projecting downward therefrom, wheels and axles, and the longitudinally-elastic links G G', combined and arranged substantially as shown, for the purpose set forth.

GEO. RUSH, JR.

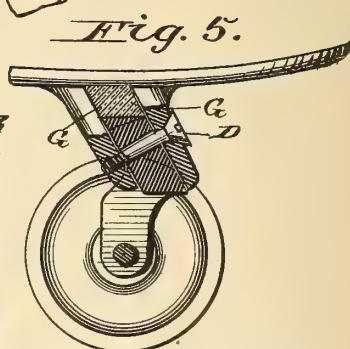
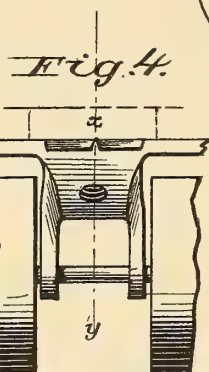
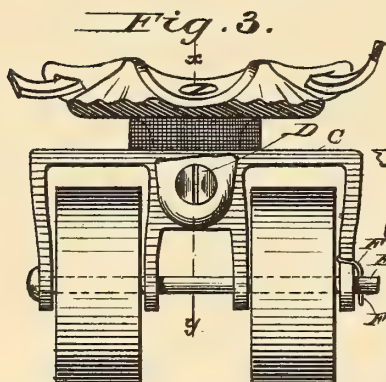
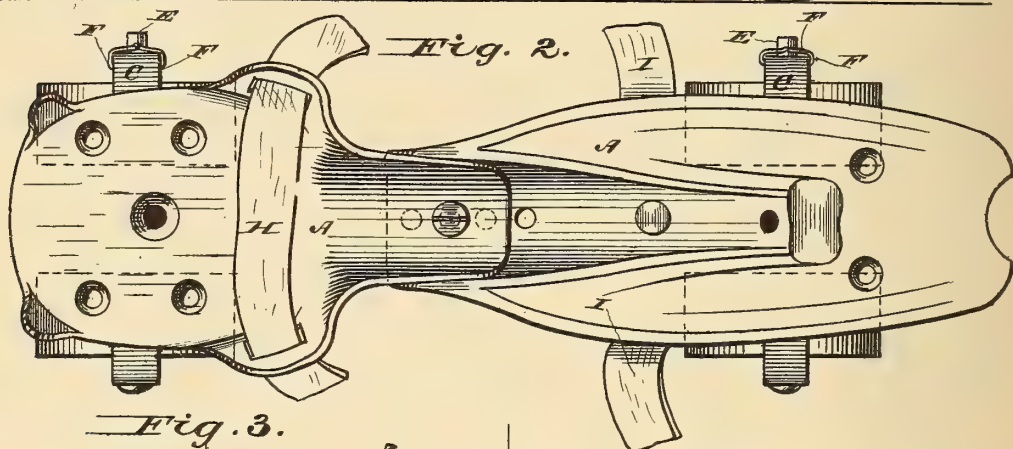
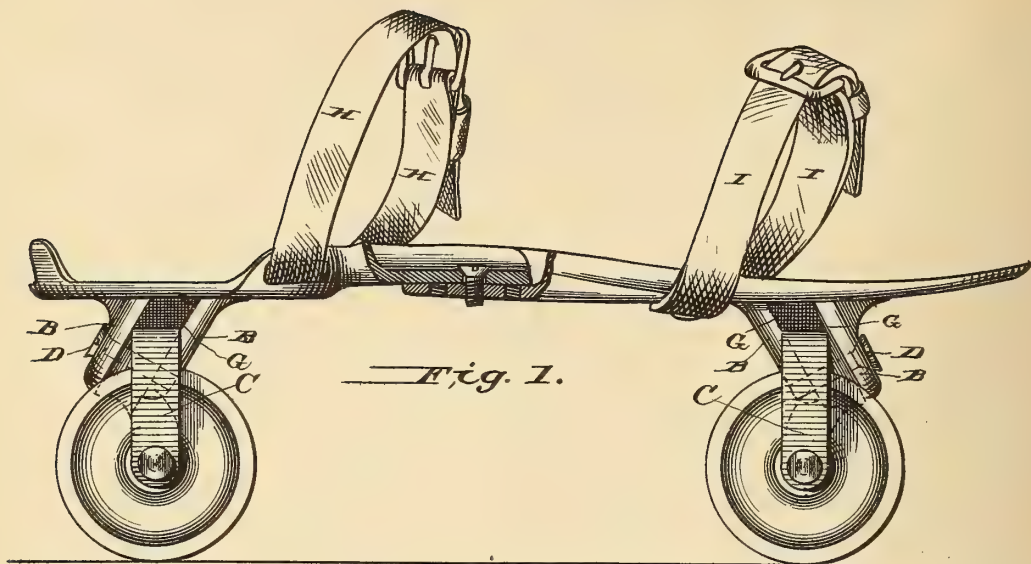
Witnesses:

J. DANIEL EBY,
E. H. GRAHAM.

W. F. CORNELIUS.
Roller-Skate.

No. 213,546.

Patented Mar. 25, 1879.



Attest:
W. L. Perrine.
Am. Socy.

Wilbert F. Cornelius.
Inventor.
By H. H. Abbott.
Atty.

UNITED STATES PATENT OFFICE.

WILBER F. CORNELIUS, OF MUNCIE, INDIANA, ASSIGNOR OF ONE-HALF HIS
RIGHT TO THADDEUS A. NEELY.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **213,546**, dated March 25, 1879; application filed
October 19, 1878.

To all whom it may concern:

Be it known that I, WILBER F. CORNELIUS, of Muncie, in the county of Delaware and State of Indiana, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation with a section cut away, so as to show the mode of adjustment to varying sizes. Fig. 2 is a plan view. Fig. 3 is an end view, partly in section, so as to show the spring. Fig. 4 is a detail view, and Fig. 5 is a section taken upon the line *x y* of Fig. 3.

A is the extension foot-rest, made in two pieces. The heel-piece of the foot-rest is made to slide over the rear part of the front piece, said piece being provided with holes, so they may be screwed or bolted securely together, the holes being bored one-half inch apart, permitting the skate to be adjusted to three or four different sizes by changing the screw or bolt to the several different holes.

B B are the slotted inclined bevel-plates on the bottom of the foot-rest, two on the rear and two on the front part of the same.

C C are the hangers, to which the inclined bevel-plates B B are attached in the center by means of coupling-screws D D, which pass through the first lug of the slotted bevel-plates B B, then through the hangers C C, and then screwed into the second lug of the slotted bevel-plates B B, which makes a secure fastening, and also makes a pivot for the hangers C C. Thus, when a side pressure is made on the foot-rest A the wheels and hangers C C must curve in the same proportion to the incline on the slotted bevel-plates B B, thus giving the foot-rest all the side and curved motions necessary in scientific skating.

The arms of the hangers C C are gouged out on the inside near the top, as shown in Fig. 3, so that when the wheels revolve it prevents any friction of the wheels against the side of the hangers.

E is the axle on which the wheels revolve, provided with a hole in one end to secure it in its proper place.

F is the wire bent around the arm of the hanger, and the two points bent downward, forming a slide on the arm of the hanger, then passing down through the hole in the axle E; then the points being bent outward holds it firmly in its place, thus making a slide-fastening both durable and cheap.

G is the rubber spring or cushion, so adjusted between the slotted bevel-plates B B as to bring the hangers C C and foot-rest to their natural upright position after having a side pressure on them.

The rubber springs G G can be so adjusted by making them extend farther out on the hangers C C as to make the hangers C C have but little side or curved motion, thereby making the skate roll in a straight line, making what is known as a "plain skate."

H I are the heel and toe straps, by means of which the skate is held firmly to the foot. The heel-strap H is held to the foot-rest by passing on the outside of a lug, then over the heel of the foot-rest, and through a corresponding lug on the opposite side, making a strong and secure fastening.

The toe-strap I is fastened by means of a rivet directly back of the front hanger, both as shown in Fig. 2.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The extension foot-rest A, provided with beveled plates B, in combination with spring G and hangers C, substantially as set forth.

2. The extension foot-rest A, provided with screw-fastening in the center of foot-rest, and lugs on the heel part of the foot-rest, for securing the strap H and bevel-plates B B, substantially as shown and described.

3. The slide-fastening F, constructed as described, in combination with hanger C, substantially as and for the purpose set forth.

4. The foot-rest A and plates B, in combination with the screw D and hangers C, substantially as shown and described.

In testimony that I claim the foregoing as

my own I affix my signature in presence of two witnesses.

WILBER F. CORNELIUS.

Witnesses:

HARRY BIRT,

T. J. BLOUNT.

W. F. CORNELIUS.

Assignor, by mesne assignments, to T. A. NEELY.

ROLLER SKATE.

No. 9,865.

Reissued Sept. 6, 1881.

Fig. 1.

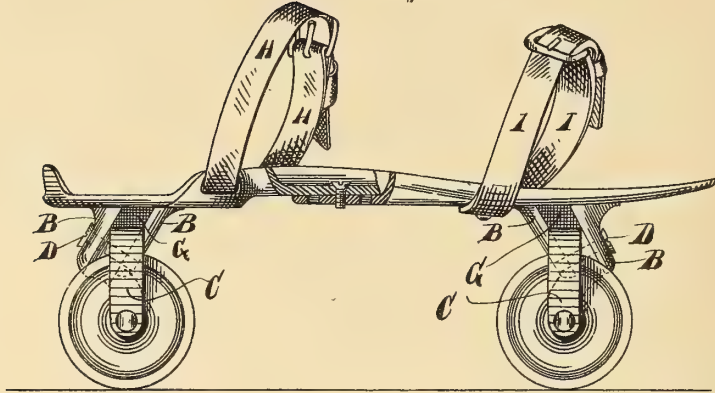


Fig. 2.

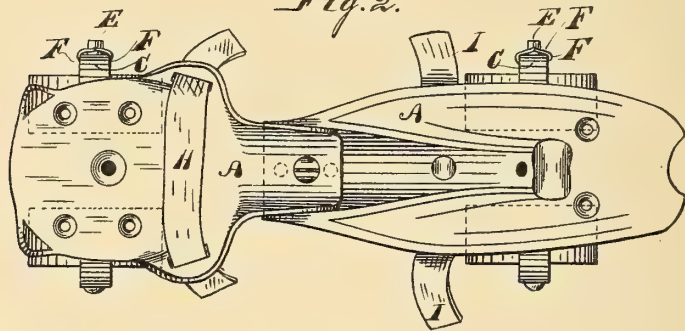


Fig. 3.

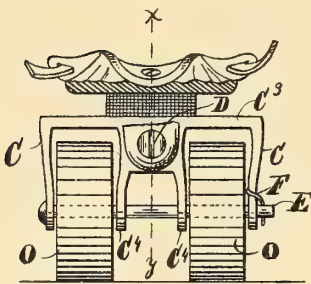


Fig. 4.

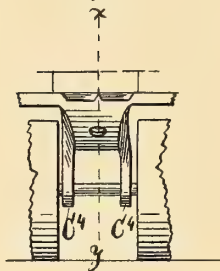
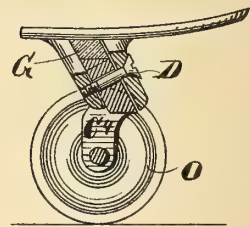


Fig. 5.



WITNESSES :
Geo. H. Bennett,
Converse D. Marsh.

INVENTOR :
Wilber F. Cornelius
Per E. H. Smith
his Attorney

UNITED STATES PATENT OFFICE.

WILBER F. CORNELIUS, OF MUNCIE, INDIANA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THADDEUS A. NEELY.

ROLLER-SKATE.

SPECIFICATION forming part of Reissued Letters Patent No. 9,865, dated September 6, 1881.

Original No. 213,546, dated March 25, 1879. Application for reissue filed April 14, 1881.

To all whom it may concern:

Be it known that I, WILBER F. CORNELIUS, of Muncie, in the county of Delaware and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to improvements in roller-skates in which the foot-rest is made adjustable in length, to form several sizes of skates, and the roller-hangers are provided with inclined pivot-bearings in their centers, one end of each bearing being higher than the other end, each inclined bearing operating in conjunction with beveled or angular pivot-bearing plates attached to the foot-rest; and the objects of my invention are, first, to afford facilities for the proper adjustment of the length of the foot-rest, whereby several different sizes may be obtained; second, to provide the roller-hangers with inclined central pivot-bearings, which operate in connection with corresponding inclined pivot-bearings in plates on the bottom of the foot-rest, by means of which the roller-hangers are forced to swing partially around horizontally on their respective inclined pivot-bearings by the lateral tilting or inclination of the foot-rest, thus causing the rollers to assume various angular positions, either to the right or left from that of a straight line, and run in curves relative to the amount of lateral inclination given to the foot-rest. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, with a section cut away to show the mode of adjusting the two parts of the foot-rest to various lengths. Fig. 2 is a plan view. Fig. 3 is an end view, partially in section, showing the spring. Fig. 4 is a detail view; and Fig. 5 is a vertical section, taken at the line *x y* of Fig. 3.

Like letters refer to like parts throughout the several views.

A is the adjustable extension foot-rest, constructed in two parts. The heel-piece of the foot-rest is made to slide over the rear part of the front piece, and said rear end of the front piece has several holes about one-half of an inch apart, by means of which and a screw or bolt the two pieces of the foot-rest may be screwed or bolted securely together and the

length of the foot-rest adjusted to three or four sizes.

B B represent two inclined plates, having an inclined slot between them, and each plate is provided with an inclined pivot-bearing—that is, the inclined pivot-bearing is at right angles to their inclined faces, or to the slot between them. Thus the bearing is closer to the bottom of the foot-rest in one plate than in the other, but in line with the direction of the length of the foot-rest. Two sets of these plates, with inclined pivot bearings in them, are employed on the foot-rest, one set at the front, and the other set at the rear, the angle of the inclined pivot-bearings in the rear set being reversed from that of the front set.

The hanger-bars C³ C³ are each provided at each end with forks C C⁴, in which the rollers O O are mounted on their respective axles. The central portion of the hanger-bar C³ is also provided with an inclined pivot-bearing corresponding in inclination to that of the inclined bearings in the plates B B, and is pivoted between said plates by a pivot or bolt, D, by means of which the hangers receive a horizontal swinging motion on the pivots D as the foot-rest is inclined to one side, and a reverse horizontal swinging motion as the foot-rest is inclined in the opposite direction, thus causing the front and rear wheels to assume reverse angles to a direct straight line of motion, and cause the skate to run in a curved line, the hind wheels tracking with the front wheels under all circumstances, the amount of curve given to the line of motion depending upon the vertical inclination of the pivot-bearing D and the amount of lateral inclination given to the foot-rest, thus giving the skater all the motions necessary in scientific skating. The forks C C⁴ of the hangers are gouged out or made wider apart where they unite with the bar C³ than where the pivot-stud or axle of the wheels is located, as shown in Fig. 3, for the purpose of preventing the wheels from coming in contact therewith.

E is the axle on which the wheels revolve, which is provided with a head at one end, and a small hole in the other end for a pin to be inserted for securing it in its proper place.

F is a wire bent around one arm, C, of the

hanger, with its two ends pointing down. This wire slides up and down on the arm C of the hanger, and the two downwardly-pointed ends are inserted in the hole formed in the axle E.

5 The points are then bent outward and hold the axle firmly in place, thus making a slide-fastening which is both durable and cheap.

In the space between the inclined or beveled plates B B, and between the upper surface
10 of the hanger-bars C³ and bottom of the foot-rest, is secured a rubber spring or cushion, by means of which the foot-rest and hangers are always held in position parallel with each other, except when the foot-rest is inclined laterally
15 to either side. By extending the rubber springs G G farther out toward each end of the hanger-bars C³, and giving a corresponding length of bearing on the bottom of the foot-rest, a greater resistance to the lateral motion of the foot-rest
20 is afforded, and consequently less swinging motion of the hangers on their inclined pivots D is produced, thus permitting the skate to roll more in a straight line, making what is known as a "plain skate."

25 H I are the heel and toe straps, by means of which the skate is held firmly to the foot. The heel-strap H is held to the foot-rest by passing on the outside of a lug, then over the heel of the foot-rest, and through a corresponding lug
30 on the opposite side, making a strong and secure fastening. The toe-strap I is fastened by

means of a rivet directly back of the front hanger, both as shown in Fig. 2.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the extension foot-rest A, consisting of two cast metal plates adjustably secured together and having the hanger-plate B cast thereon or therewith, substantially as and for the purpose set forth.

2. The extension foot-rest A, provided with screw-fastenings in the center of foot-rest and lugs on the heel part of the foot-rest for securing the strap H and bevel-plates B B, for the purpose set forth.

3. The slide-fastenings F, constructed as described, in combination with hanger C and axle E, as set forth.

4. In a roller-skate, the extension foot-rest A, consisting of two cast metal plates adjustably secured together and having the hanger-plates B cast thereon or therewith, in combination with screw D and hanger C, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILBER F. CORNELIUS.

Witnesses:

HENRY C. KLEIN,
WILL C. KLEIN.

T. T. H. HARWOOD.
Convertible Skate.

No. 214,563.

Patented April 22, 1879.

Fig. 1

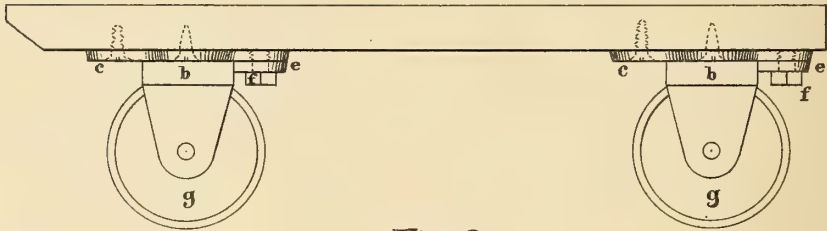


Fig. 2

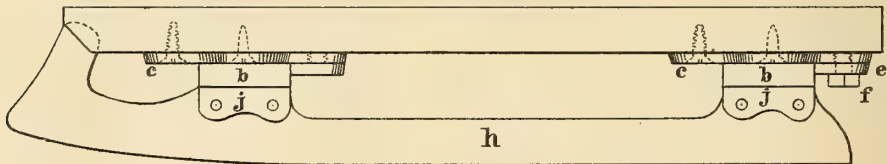


Fig. 3

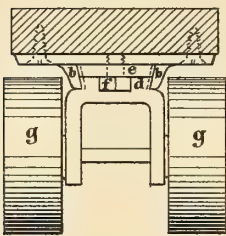


Fig. 5

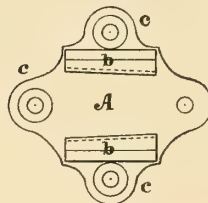


Fig. 4

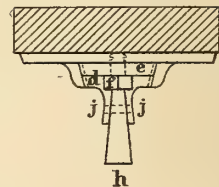


Fig. 6

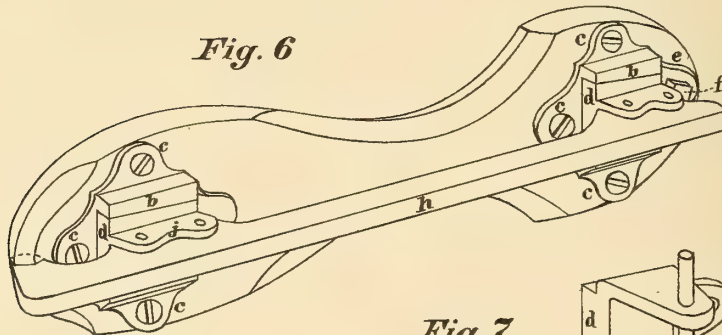
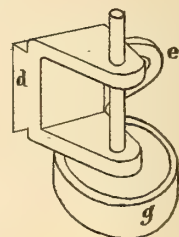


Fig. 7



Witnesses:

J. A. Murphy
Wm. M. Douglass

Inventor:

T. T. Hunter Harwood.

UNITED STATES PATENT OFFICE.

T. T. HUNTER HARWOOD, OF DETROIT, MICHIGAN.

IMPROVEMENT IN CONVERTIBLE SKATES.

Specification forming part of Letters Patent No. **214,563**, dated April 22, 1879; application filed May 31, 1878. *

To all whom it may concern:

Be it known that I, T. T. HUNTER HARWOOD, of the city of Detroit, State of Michigan, have invented a Convertible Skate, of which the following is a specification.

The object of my invention is to construct a skate which may be used on the ice and on a floor or pavement alternately by making it interchangeable from a roller-skate to an ice-skate, the rollers and the skate-iron being made adjustable and removable upon the same frame for that purpose, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a side view of a roller-skate, showing my improvement. Fig. 2 is a side view, representing my improved skate with iron runner attached in lieu of the rollers. Fig. 3 is a cross-section of skate-stock, with end elevation of roller attachment. Fig. 4 is a cross-section of skate-stock, with end elevation of iron blade attached. Fig. 5 is a bottom-plan view of beveled dovetail seat. Fig. 6 is a perspective view of Fig. 2, and Fig. 7 a perspective view of an adjustable roller-frame.

The same letters refer to like parts in each of the figures.

A *b* represent a metal socket or slide, which is composed of the bed-plate *A* and two projecting bars, *b*, the adjacent inner surfaces of which are made in dovetail shape, and slightly divergent from one end to the other, thus forming a key-seat for the reception of the wedge-block *d*, hereinafter described. This seat is securely fastened to the frame or stock of the skate by means of two or more lugs, *e*, which project from the bed-plate *A*, and by screws introduced through them into the body of the frame. If the stock or frame of the skate is composed of metal, rivets may be used in lieu of the screws; and if it is made of cast metal, then the projecting beveled side bars *b* may be part of the casting. Into this socket or slide *A b* is fitted a dovetailed and beveled or wedge-shaped block or key, *d*, in such manner that it may be passed longitudinally into it from one end of the seat until it is securely driven home, and thus firmly and rigidly held between the bars *b*. One end of this block *d* is provided with a lug or longitudi-

nal projection, *e*, through which a set-screw, *f*, is passed, which screws into a similarly-formed projection upon the seat or bed-plate *A*, or into the body of the frame or stock, as may be preferred. Two of these sockets or slides *A b* are attached upon the bottom side of the skate-stock, as shown in the drawings. The two wedge-blocks *d* (shown in Figs. 1, 3, and 7) are provided with suitable bearings or frame-work for the support of the rollers *g*, so that the skate may be used as a roller-skate upon a floor or pavement.

In Figs. 4 and 6 the skate is shown as converted into a blade-skate for use upon ice, an iron runner, *h*, being substituted for the rollers. In this form the blocks *d* are provided with jaws *j*, between which the iron or steel blade *h* is securely held by one or more rivets. In case the blade or runner is made of cast metal, the blocks *d* may be formed thereon as a part of the casting.

It will readily be seen that inasmuch as the blade provides of itself a firm and rigid connection between the two blocks *d*, only one set-screw, *f*, is required to prevent the iron from becoming disconnected.

In order to produce greater strength in this form of my improved skate, the blocks *d* are passed and driven into their seats *A b* from the front end of the frame in such manner that the nose of the iron will rest against or enter a slot made in the front or toe of the stock. At every successive stride of the skater in skating forward, the blade is driven harder and tighter into the seat, and should the skater strike upon obstructions on the ice the same effect will be produced, rendering a disconnection of the iron from the frame an impossibility during the forward movements of the skater. The single set-screw *f* at the heel of the skate, Figs. 2, 4, and 6, is all-sufficient to hold the iron in place during the backward movement.

Although I insist that the dovetail shape of the block *d* and its corresponding seat *A b* should be combined with the longitudinal wedge shape (more clearly shown in Fig. 5) in order to obtain the most perfect and rigid connection of the two parts, I do not debar myself from using either the dovetailed or

the wedge shape singly. Should it be preferred, for instance, to form the sides *b* of the seat *A b*, as well as the block *d*, of wrought metal, then the dovetail shape shown in Figs. 3 and 4 may be dispensed with, and the longitudinal wedge shape will be sufficient to furnish a firm and rigid connection of the two parts. The sides or bars *b* may in that case have an angular or L-shaped cross-section substituted for their dovetailed form, and will overlap the edges of the block *d*, which is slid in between the laps. In this modified form of the block *d* and its seat, the wedge shape is indispensable.

My improvement is more especially designed for and adapted to the cheaper class of skates, principally used by children; but it may also be applied in the construction of the more complicated varieties of and improvements in both the roller and the ice skates.

I claim as my invention—

1. In a skate, the combination of the bed-plate *A* and bars *b*, for reception of wedge-shaped block *d*, substantially as shown, and for the purpose described.

2. The bed-plate *A*, with beveled side bars, *b b*, for reception of wedge-shaped block *d*,

secured to the stock of the skate by means of lugs *c*, substantially as shown and described.

3. The wedge-shaped block *d*, secured to the runner *h*, in combination with bed-plate *A*, with beveled side bars, *b b*, substantially as shown, and for the purpose described.

4. The detachable skate-runner *h*, having wedge-shaped blocks *d d*, with jaws *jj*, adapted to the corresponding beveled side bars, *b b*, of the bed-plate *A*, secured by set-screw *f*, projected through the lug *e*, substantially as shown and described.

5. The bed-plate *A b*, connected to or forming part of the frame of a skate, for the purpose and substantially as described.

6. The wedge-shaped block *d*, in combination with the bed-plate *A b*, for the purpose and substantially as set forth.

7. The set-screw *f*, in combination with the wedge-shaped block *d* and bed-plate *A b*, for the purpose and substantially as herein described.

T. T. HUNTER HARWOOD.

Witnesses:

T. A. MERPHY,
WM. M. DOUGLAS.

W. C. TURNBULL.
Roller-Skate.

No. 215,081.

Patented May 6, 1879.

Fig 1.

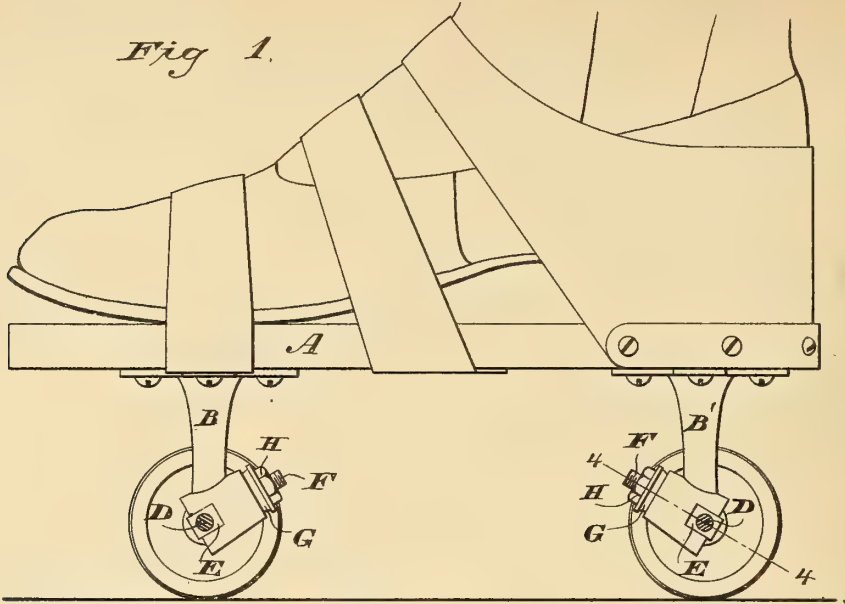


Fig 2.

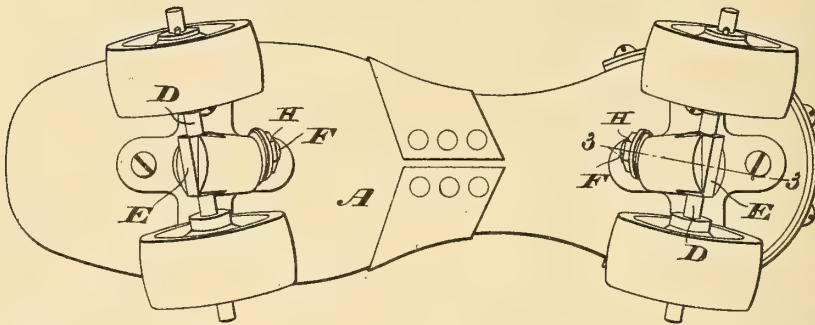


Fig 3.

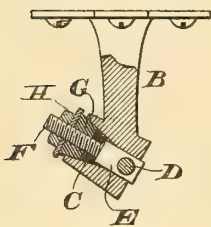


Fig 4.

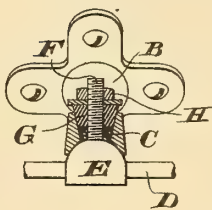


Fig 5.

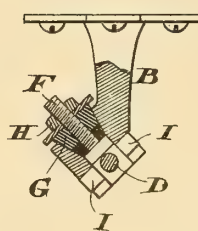
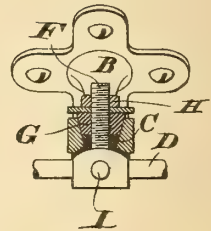


Fig 6.



WITNESSES

Wm A Skinkley
Geo W Breck.

INVENTOR

William C. Turnbull,
By his Attorneys
Baldwin, Hopkins & Lytton.

W. C. TURNBULL.

Roller-Skate.

No. 215,081.

Patented May 6, 1879.

Fig 7.

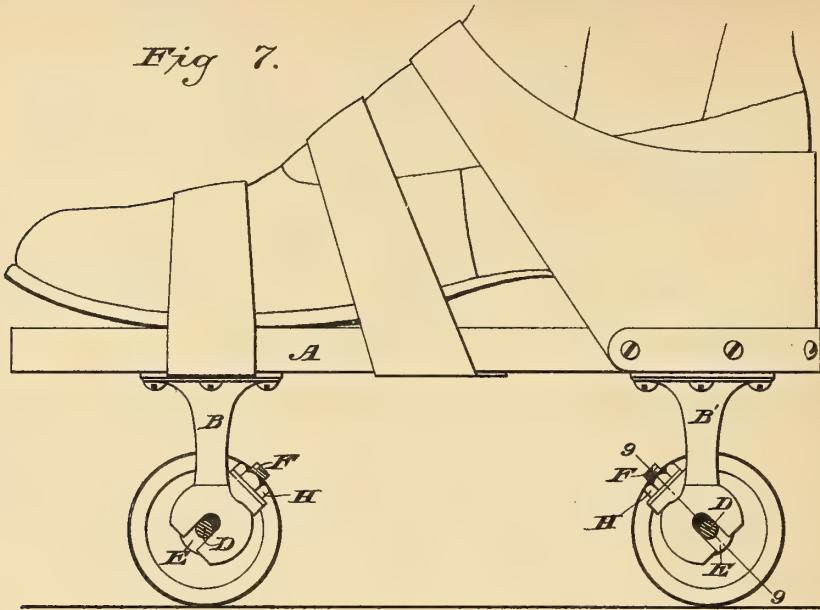


Fig 8.

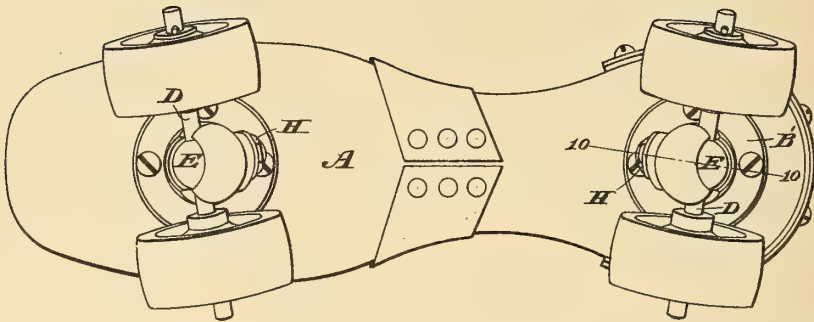


Fig 9.

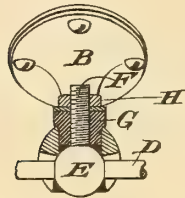
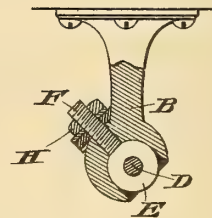


Fig 10.



WITNESSES

Wm A Skinkle
Geo W Buck

INVENTOR

William C. Turnbull.

By his Attorneys

Galdwin, Hopkins & Heyton.

UNITED STATES PATENT OFFICE.

WILLIAM C. TURNBULL, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **215,081**, dated May 6, 1879; application filed March 6, 1879.

To all whom it may concern:

Be it known that I, WILLIAM C. TURNBULL, of Baltimore, in the State of Maryland, have invented certain Improvements in Roller-Skates, of which the following is a specification.

The object of my invention is to secure lightness, durability, simplicity of construction, cheapness of manufacture, and efficiency in action of the parts which give to the roller-axes their necessary movement to facilitate turning or describing curves by the skater. To this end my plan is to employ two standards secured firmly to the bottom of the foot-plate, and provided at their lower ends each with a slot or bearing having an aperture through its bottom, the slot and aperture being preferably in the same line and at an angle of about forty-five degrees, more or less, those in the front standard inclining forward, and those in the rear standard backward. I employ roller-axes provided with enlargements or journal-pieces at their middle semicircular on one side to fit the bearings.

A screw-bolt firmly set in each journal-piece projects through the aperture in the bottom of the bearing, and is provided with a nut and an elastic washer or packing to hold the axle in place. The result of this construction and arrangement of parts is, that when the skater desires to turn, and presses upon one side of the foot-plate more than upon the other he will tilt the foot-plate and standards more or less, which, by the action of the sides of the slots on the journal-pieces, will cause the front and rear axles to turn in opposite directions, the rollers on the side to which the foot-plate tilts approaching each other, and those on the opposite side receding from each other. Thus all the rollers are kept on the floor and in action, substantially as when the skater is moving in a right line, and when the skate is lifted from the floor, or the pressure of the foot becomes perpendicular, the elastic packing serves to adjust the rollers to their normal position.

My invention consists, essentially, in combining fixed standards having bearing-slots with axles that are provided with journal-pieces, as indicated, and it extends to all the details and

combinations of parts which are important to the practical operation of a roller-skate constructed on that plan.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side elevation, and Fig. 2 a bottom view, showing the front and rear roller-axes turned slightly in opposite directions. Fig. 3 is a section through the line 3 3 of Fig. 2, and Fig. 4 a section through the line 4 4 of Fig. 1.

A indicates a foot-plate of a skate; B B', front and back standards secured to its bottom, and having bearing-slots in their lower ends; and C indicates a bolt-aperture, preferably circular and slightly funnel-shaped, but which may be elongated in a direction transverse to the foot-plate. D indicates a roller-axle with a journal-piece, E, about at its middle, and F a screw-threaded bolt or projection from the journal-piece, which extends through the aperture C. A washer, G, surrounds this bolt, and when clamped in place by the nut H it will always tend to keep the axles and standards at right angles, which is their normal position.

I may, in some cases, dispense with the screw-bolts, their washers, and the apertures through the bottoms of the bearing-slots, although I prefer to employ them ordinarily. When I dispense with them I spin over the margins of the bearing-slots to cover and hold the journal-pieces in place, or I otherwise secure them in the slots by a pin or cap.

The standards may be made hollow in order to diminish weight, or they may be composed of two or more columns or supports, so arranged as to secure strength and lightness. I do not claim any particular form of standard.

If desirable to strengthen the roller-axes, I may elongate the journal-pieces; but in practice I have not found it necessary.

It will be observed that by my invention I dispense entirely with roller-frames for supporting the axles, and reduce the parts necessary to secure the proper movements or adjustments to a minimum number.

Figs. 5 and 6 show a modification in form of my invention, in which I employ trunnions I, resting in bearing-slots of their own.

Instead of either of the forms described, I may use a ball-and-socket joint, as shown in Figs. 7 to 10, inclusive.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A fixed skate-standard, having an inclined axle-slot, with a curvilinear bottom and an aperture through the curved bottom, substantially as described.

2. A skate-roller axle provided with a journal-piece at its middle, having its upper or bearing side curvilinear, substantially as described.

3. The combination of a fixed skate-standard, having an inclined axle-slot with a curvilinear bottom, with a roller-axle provided with a journal-piece at its middle having its bearing side curvilinear, substantially as described.

4. A skate-roller axle provided with a journal-piece at its middle, having its bearing side curvilinear, and having a screw-bolt projecting from it, substantially as described.

5. The combination, with a skate foot-plate, of two fixed standards, each having an inclined slot or bearing that has a curvilinear bottom, with roller-axes, each having a journal-piece at its middle, with its bearing side curvilinear, the slot in the front standard inclining forward, and that in the rear standard inclining backward, whereby the proper movements of the parts for describing curves in skating are effected, substantially as described.

6. The combination of a fixed standard, having an inclined slot or bearing and a curvilinear bottom, and a bolt-aperture through said bottom, with a roller-axle and journal-piece, a screw-bolt, an elastic washer, and a nut, substantially as described.

In testimony whereof I have hereunto subscribed my name.

WILLIAM C. TURNBULL.

Witnesses:

MARCUS S. HOPKINS,
WM. J. PEYTON.

L. B. JACKSON, Jr.
Roller-Skate.

No. 215,752.

Patented May 27, 1879.

Fig 1.

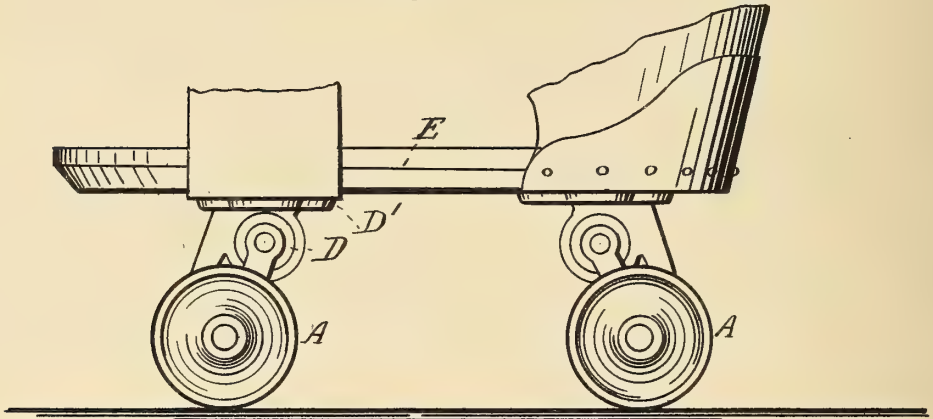


Fig 2.

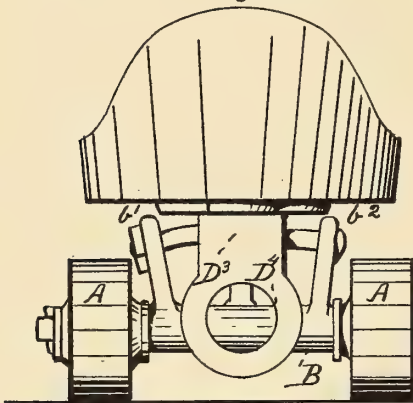


Fig 3.

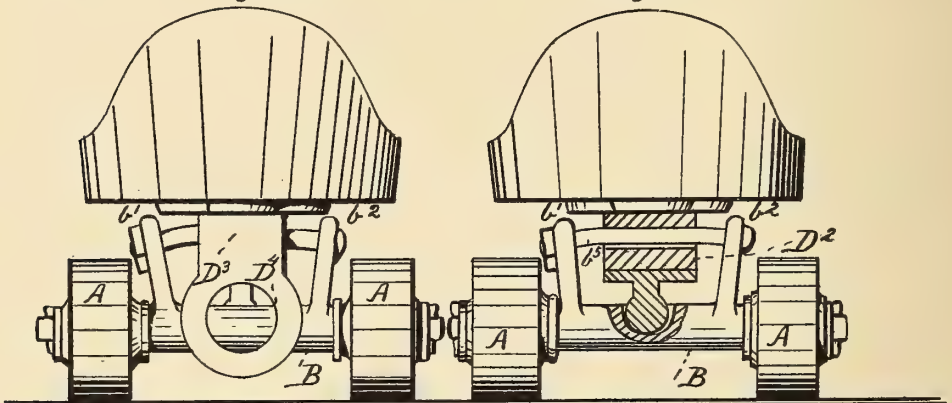
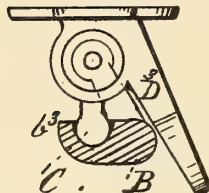


Fig 4.



WITNESSES

T. Marks.
R. Bore

INVENTOR

Lewis B Jackson, Jr.
B. L. Pole & Comp^y

ATTORNEYS.

L. B. JACKSON, Jr.
Roller-Skate.

No. 215,752.

Patented May 27, 1879.

Fig 5

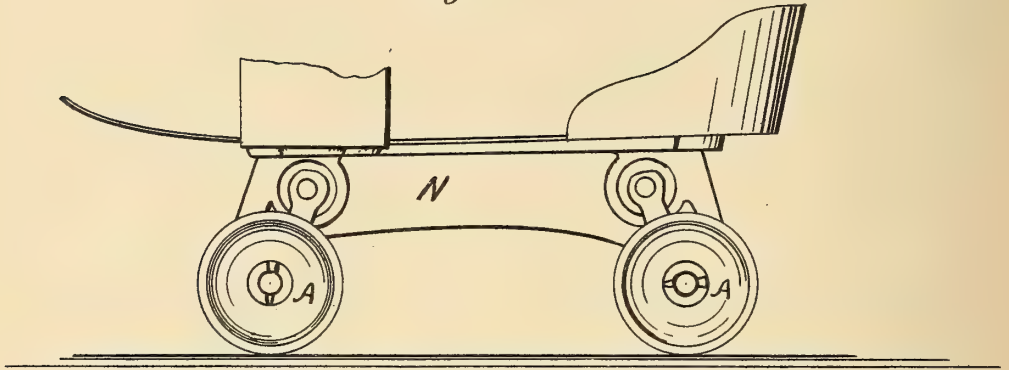


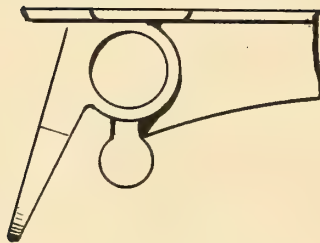
Fig 6.



Fig 7.



Fig 8.



WITNESSES
T. Marks.
R. Bores.

INVENTOR
Lewis B. Jackson Jr.
B. C. Pole and Comp.

ATTORNEYS

UNITED STATES PATENT OFFICE.

LEWIS B. JACKSON, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **215,752**, dated May 27, 1879; application filed April 2, 1879.

To all whom it may concern:

Be it known that I, LEWIS B. JACKSON, JR., of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, end elevation at heel; Fig. 3, part sectional elevation; Fig. 4, part sectional elevation of guide and ball-joint; Fig. 5, side elevation with rib-connection; and Figs. 6, 7, and 8, sections of guide and side of same.

This invention has relation to roller-skates; and the object thereof is to construct a skate that will be strong and durable, and at the same time simplify the manner of connecting the rollers to the foot-plate, the general construction and arrangement thereof being hereinafter described, and subsequently pointed out in the claim.

In the accompanying drawings, A represents the rollers, of wood or other suitable material, mounted upon the axles B, the same being provided with two upright arms, b^1 b^2 , through which pass longitudinal bolts b^5 . The axles B are formed with a semicircular socket, b^3 , for receiving the cylindrical end or ball C, projecting from a chamber, D, provided with flanges D^1 , to which the foot-plate E is attached, or, if desired, may have a connecting-rib, as illustrated in Fig. 5. Within the chamber D is fitted an elastic cushion, D^2 , through which passes the bolt b^5 , and projecting downward from the chamber D is a guide, D^3 , terminating in a ring, D^4 .

In the construction as illustrated in Figs. 6 and 7, the cylinder or chamber D is divided, and a partition passes across the center, metallic springs being used in the construction to operate the axle, which pivotal construction, Fig. 6, will necessitate a steel plate for it to rest upon.

In the operation of this invention, a party, previous to skating, is supposed to have placed the skates upon the feet, so that while skating, being desirous of making a sudden turn or curve, he simply turns over the skate in the direction desired, thereby causing the roller to be thrown inwardly, this being accomplished by the axle B turning or moving on the ball C, and in turning over the inclined plane or guide D^3 causes the wheel to pass inwardly with the direction of the turn of the foot of the operator, and it is well understood that the wheels will, when so turned, run in a curve, the line being the circumference cutting both forward and after wheels.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The socketed axle D, with arms b^1 b^2 and bolt b^5 , in combination with the chamber D, rubber cushion D^2 , and guide D^3 , terminating in a ring, D^4 , substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

LEWIS B. JACKSON, JR.

Witnesses:

DAVID TODD,
STEPHEN P. SMITH.

J. M. LEWIS.
Roller-Skate.

No. 216,687.

Patented June 17, 1879.

Fig. 1.

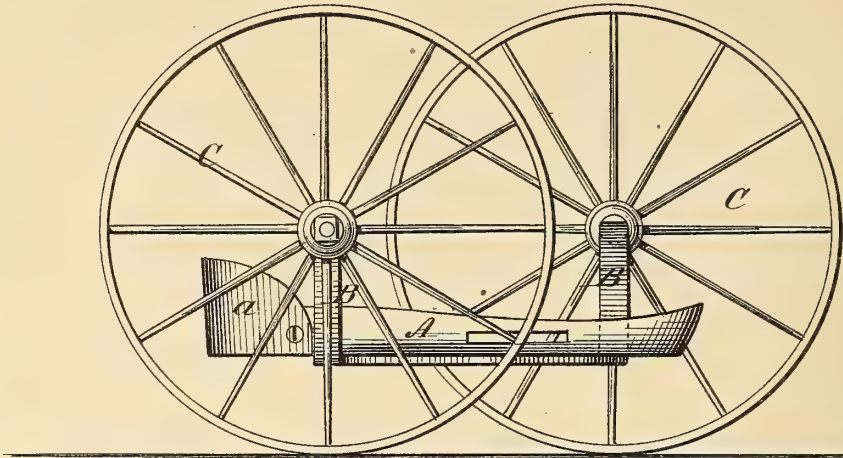


Fig. 2.

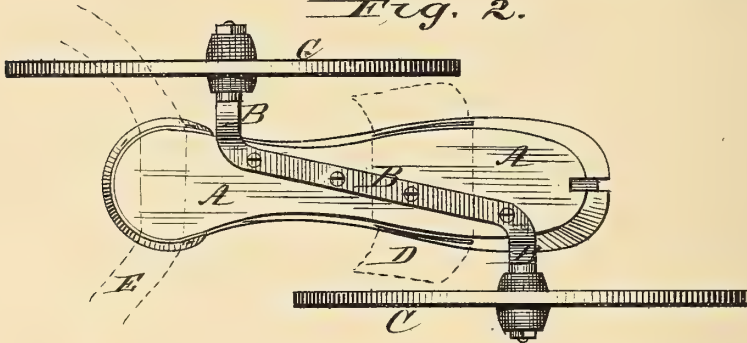


Fig. 3.

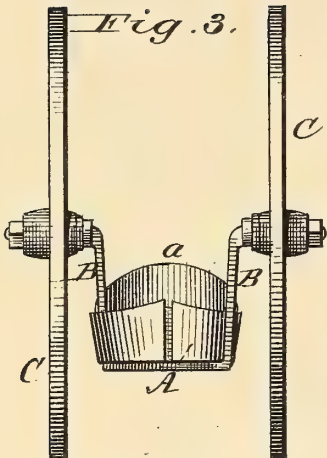
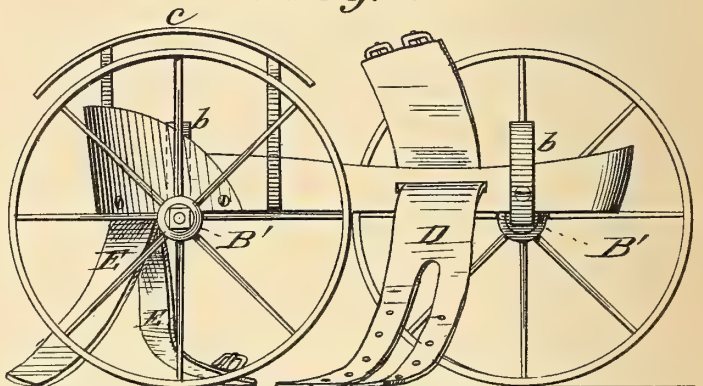


Fig. 4.



Attest:

H. C. Penning,
J. W. Hamilton Johnson

Inventor.

James M. Lewis

By. C. H. Slicer

Atty.

UNITED STATES PATENT OFFICE

JAMES M. LEWIS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **216,687**, dated June 17, 1879; application filed April 4, 1879.

To all whom it may concern:

Be it known that I, JAMES M. LEWIS, of Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Roller-Skates, which I denominate a "Pedo-Motor;" and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention is a device for attachment to the feet of a person, who may thereby propel himself with ease and rapidity, and is analogous in its purpose to roller-skates, but contemplates a more extended use, in that a person may travel with the pedo-motor upon street sidewalks, pavements, or ordinary roadways.

The device itself is substantially a foot-platform having wheels attached after a peculiar manner.

The invention broadly consists of a foot-platform provided with two wheels, arranged in such a manner as not only to perform all the functions of four wheels, but to avoid the inconvenience of guiding a foot-motor with a normal arrangement of rigid wagon-like wheels. For this purpose two wheels are used—one upon one side of the platform near the toe, and the other upon the opposite side near the heel.

Preferably the rim of one wheel revolves partly within that of the other; but this would depend on the diameter of the wheels with reference to the length of the platform. If a long platform has wheels of small diameter, the wheels would not necessarily revolve one partly within the rim of the other; but this is not a necessity. The height of wheels and length of platform should determine this.

The two wheels being so arranged with their bearing axial points diagonal to each other and on opposite sides, as before stated, the foot is allowed free ankle movement, which is readily imparted to the pedo-motor, thus obtaining that action which is so necessary in describing curves while skating, or even in the "striking out" or starting. Cramping is also avoided by this arrangement.

In the accompanying drawings, Figure 1 represents a side elevation of my pedo-motor; Fig. 2, a bottom view thereof; Fig. 3, a front elevation, showing the crank-axles; and Fig. 4, a side elevation of a modified form, such modification dispensing with the crank-axles, the axle of each wheel terminating in a foot-guard.

The foot-platform A is made in a manner similar to those used in ordinary skates, and may have the usual heel-guard *a*; but from its under side the axles B of the wheels C project near heel and toe at oblique points, thereby bringing one of the wheels forward of the other on the opposite side of said foot platform or plate. I have shown and prefer to have the axles B crank-axles, in order to bring the platform, and consequently the foot of the skater or traveler, as close as may be to the ground, and the axle may or may not be continuous, as shown clearly in Fig. 2. If so arranged continuously it adds strength to the platform. It might, however, be divided—that is, the axle of each wheel might be run under the platform at right angles or otherwise arranged. The usual straps D E are provided for fastening purposes.

In Fig. 4 I have shown a modification, wherein the crank-axles are dispensed with, and in lieu thereof straight axles B' are used, (one for each wheel,) running under the platform and fastened thereto, and terminating in a foot-guard, *b*, as shown. I may also provide a mud-shield or leg-guard, *c*, for the wheels.

The wheels may be spoked, disked, or other wheels, of metal, wood, or other suitable material.

When wheels of large diameter—say from nine inches to one foot—are used, it is necessary that the rim of one wheel should revolve partly within that of the other if the platform is the length of the foot, as it should be.

My invention permits of the most graceful motions in gliding over ground. The skater may perform all the complex evolutions of the ice-skater. He may have free ankle movement and impart it to the platform of the pedo-motor.

The prime advantage is, that it is intended for the use of persons upon the streets—a thing incapable of being accomplished by the usual roller-skate, which can only be used in the "rinks."

The wheels are situated on opposite sides, one near the heel and the other near the toe, and the pedo-motor rocks and conforms to the movement of the foot through the ankle movement.

I claim—

A roller-skate or pedo-motor consisting of a foot plate or platform and two wheels, located respectively near the heel and the toe, and on

opposite sides of the foot-plate, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of April, A. D. 1879.

JAMES M. LEWIS.

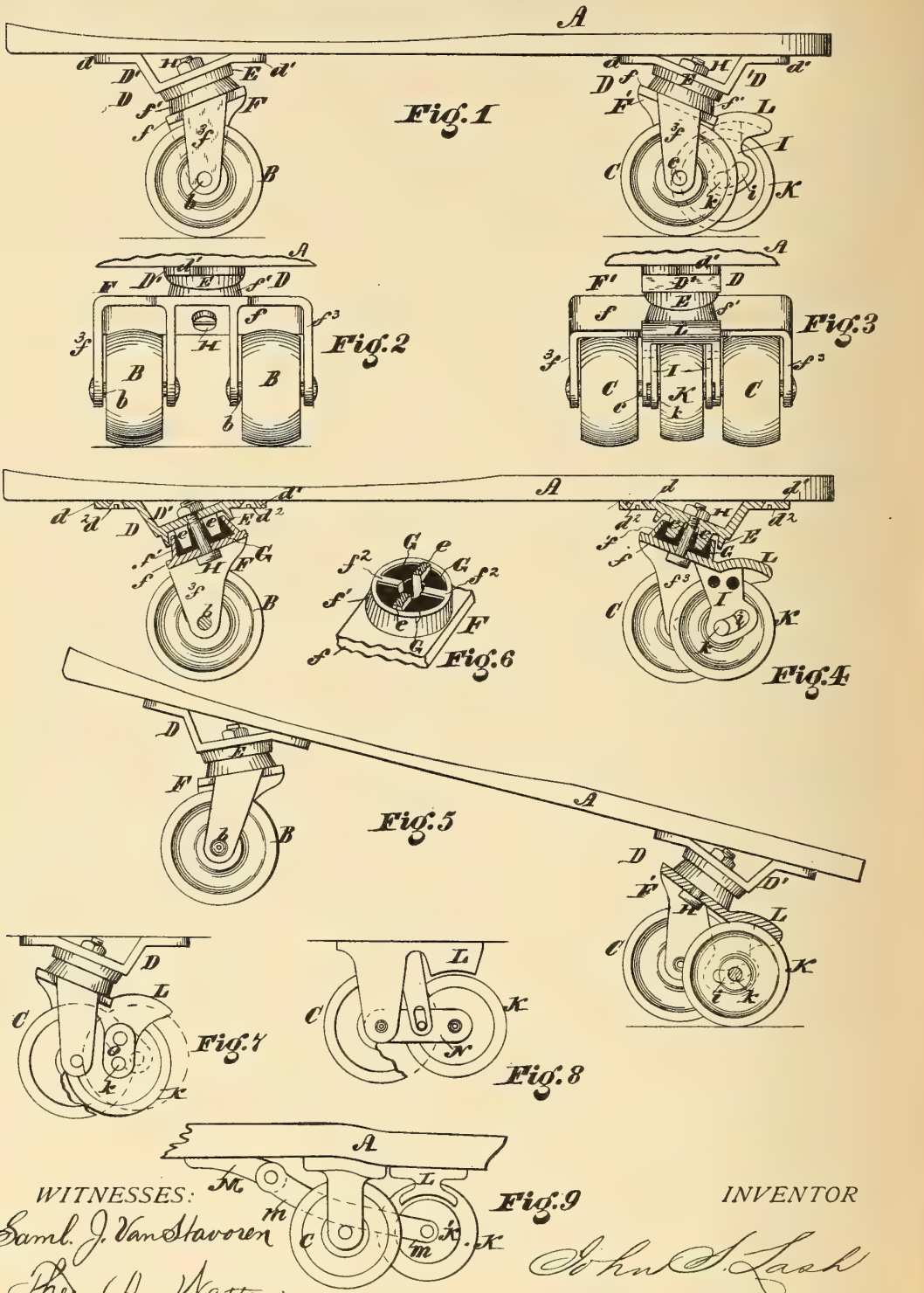
Witnesses:

C. H. SLICER,
R. K. LEWIS.

J. S. LASH.
Roller-Skates.

No. 218,035.

Patented July 29, 1879.



WITNESSES:
Saml. J. VanStavoren
Phos. A. Watterson.

INVENTOR

John S. Lash
By Connolly Bros. ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN S. LASH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **218,035**, dated July 29, 1879; application filed April 15, 1879.

To all whom it may concern:

Be it known that I, JOHN S. LASH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side elevation of my invention. Figs. 2 and 3 are, respectively, rear elevations of front and rear roller-brackets and rollers. Fig. 4 is a longitudinal vertical section. Fig. 5 is a side elevation, showing the skate raised to bring the brake-roller in contact with the brake-shoe. Fig. 6 is a detail sectional perspective, and Figs. 7, 8, and 9 are side elevations, of modifications of brake-rollers.

My invention has relation to means for causing the rollers to travel in curves when weight is thrown on one side or the other of the skate; also, to a brake, which is brought into action only when the skate is moving forwardly and the front or toe thereof is elevated.

My improvements consist in the peculiar construction and combination of parts hereinafter fully described.

Referring to the accompanying drawings, A indicates the stock or foot-plate of a roller-skate, and B B and C C the rollers secured thereto. D D are brackets, having lugs $d\ d'$, through which fastening-screws $d^2\ d'^2$ pass into the stock A. The portion of each bracket D between the lugs $d\ d'$ consists of an L-shaped plate, D', arranged at an angle to the stock A, and formed with a socket, E, in which are radial partitions $e\ e$.

F F' are casters, having inclined plates $f\ f'$, with sockets or annular flanges $f^1\ f'^1$, adapted to fit and turn in the sockets E E, formed with partitions $e\ e$ at right angles to the partitions $f^2\ f'^2$, and having links $f^3\ f'^3$, which receive the axles $b\ c$ of the rollers B B C.

G G are segments of india-rubber fitted in the sockets $f^1\ f'^1$ between the partitions e and f^2 , and H H are bolts passing in inclined di-

rections through the plates D' and f , and forming the spindles of the roller-casters. Said spindles incline, as shown, in opposite directions toward the heel and toe of the skate respectively.

When in use, if the weight of the skater's body be thrown on either side of the stock, the rollers will move in curved lines, and when such weight is released the resiliency of the segments will restore the rollers to parallelism with a straight line drawn longitudinally through the middle of the stock A.

I I are links rigidly fastened to the casters F' between the rear rollers, C C, having slotted bearings $i\ i$ for the reception of the axle k of a roller, K, which latter is of less diameter than the rollers C C. L is an extension of or attachment to the plate f , which forms a brake-shoe for said roller K.

The slots $i\ i$ incline upwardly toward the brake-shoe L, so that when the axle k of the roller K is in the forward part of said slots (its normal position) said roller will be out of contact with said brake-shoe; but when the said axle moves into the rear part of said slots the periphery of said roller K will be brought into frictional or brake contact with said shoe L.

When the rollers B C are on the ground or floor the axle k will be forward in the slots $i\ i$. Now, if the skate be moving forwardly, and the toe or front be elevated and the rollers B raised sufficiently, the periphery of the roller K will meet the floor or ground, and said roller K be moved far enough to cause it to come in contact with the brake-shoe L, the axle k moving backwardly to the rear extremity of the slots $i\ i$. This instantly applies the brake and checks the forward movement of the skate, thereby obviating wholly, or in great measure, the tendency to have one's heels slip from under one when the toe is raised in going forward. If, however, the toe be raised in going backward the brake will not be applied, the direction of motion then causing the roller K to move toward the toe, so as to be out of possibility of contact with shoe L, the axle k then being in the forward part of the slots $i\ i$.

In Fig. 9 I have shown a modification, wherein roller K is hung in links $m\ m$, swiveled on

a plate, M, fastened to the stock A. In this case the roller K is formed with a hub, K', which brakes by frictional contact with shoe L.

In Fig. 8 is shown another modification, wherein links N N are swiveled on the axle, or in line with the axle of rollers C C.

In Fig. 7 is shown another modification, wherein swinging links *o o* are substituted for the slots *i i*.

What I claim as my invention is—

1. The combination of plate D', having socket E, with radial partitions *e e*, and plate *f*, having socket or annular flange *f*¹, and radial partitions *f*² with connecting-bolt or spindle H, substantially as shown and described.

2. In combination with plates D' and *f*, having sockets or annular flanges and radial partitions *e* and *f*² and connecting-bolt or spindle

H, the india-rubber segments G, substantially as shown and described.

3. The combination, in a roller-skate, of a brake roller and shoe, constructed and arranged to come in contact when the toe of the skate is raised in going forward, substantially as shown and described.

4. The combination, with caster F', of slotted hangers I I, or their described equivalent, brake-roller K, and shoe L, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of April, 1879.

JOHN S. LASH.

Witnesses:

SAML. J. VAN STAVOREN,
CHAS. F. VAN HORN.

R. GORNALL.
Pedomotor.

No. 222,034.

Patented Nov. 25, 1879.

Fig. 1.

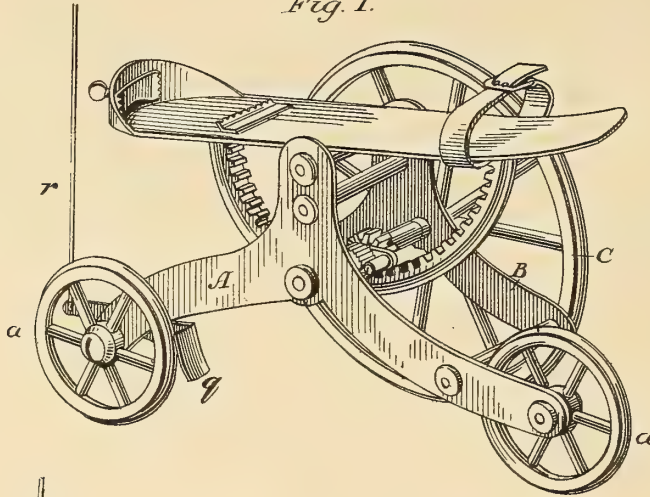


Fig. 2.

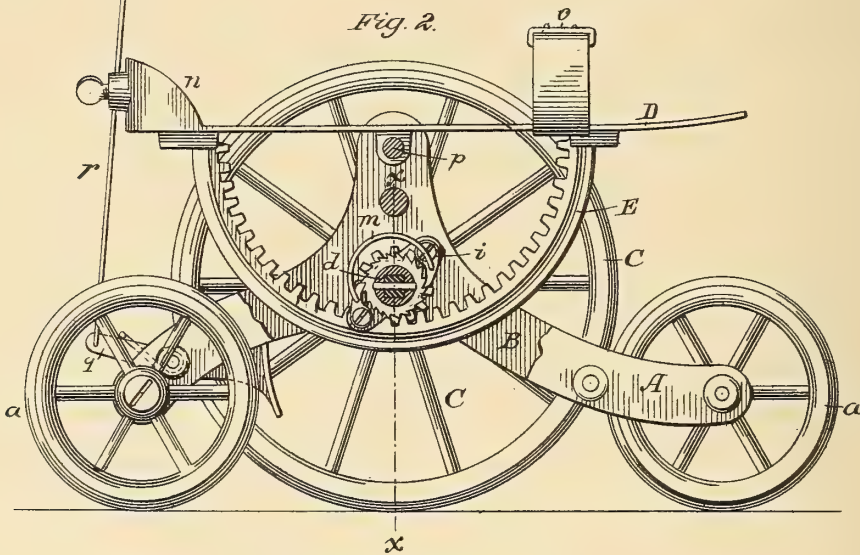
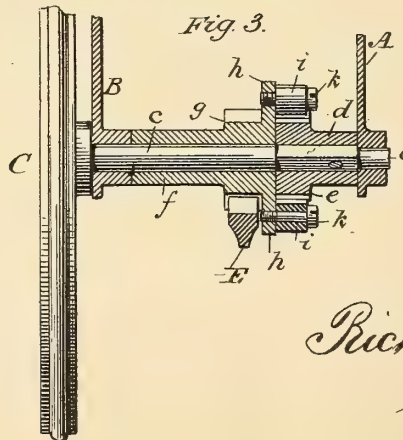


Fig. 3.



Attest:
C. Clarence Poole
Warren Secy.

Inventor:
Richard Gornall
by Ellis Spear
Atty

UNITED STATES PATENT OFFICE.

RICHARD GORNALL, OF BALTIMORE, MARYLAND, ASSIGNOR TO HIMSELF
AND THOMAS TANSLEY, JR., OF SAME PLACE.

IMPROVEMENT IN PEDO-MOTORS.

Specification forming part of Letters Patent No. **222,031**, dated November 25, 1879; application filed April 21, 1879.

To all whom it may concern:

Be it known that I, RICHARD GORNALL, of Baltimore, Maryland, have invented an Improvement in Devices for Accelerating the Motion of Walking, of which the following is a specification.

My invention is a device for accelerating the motion of walking; and it consists, essentially, of a frame supported upon small wheels, and supporting a foot-rest which is movable upon the frame, and connected to one or more of the wheels by intermediate gearing, whereby the natural motion of the foot, as in walking, imparts rotary motion to one or more of the wheels.

It is most nearly related to that class of devices known as roller-skates, resembling them in this, that the feet of the user rests upon plates fitted thereto, and he is carried upon the wheels which support the said plates; but it differs from that class of devices in this essential respect, that in my device the ordinary motion of the ankles is used to impart the rocking motion to the plate, which directly supports the feet, which rocking motion is utilized to rotate the supporting-wheels, (one or more of them,) thereby converting them into driving-wheels and propelling the user without the ordinary pushing motion necessary for locomotion upon any kind of skate.

In the drawings which accompany this specification I have illustrated the best means known to me for carrying my invention into practical effect.

In these drawings, Figure 1 is a perspective view of my apparatus. Fig. 2 is a vertical longitudinal section, and Fig. 3 a transverse section on line *x x* of Fig. 2.

In this embodiment of my invention I make a strong metallic frame, (represented at A B.) Upon the ends of the side piece, A, are pivoted suitable supporting-wheels *a a*, which I make as light as is consistent with proper strength, and preferably covered upon the periphery with rubber or some equivalent material for giving slight elasticity. These wheels I prefer to mount loosely, and use them simply as supporting-wheels, and, being used simply for that purpose, they may be made of very small diameter.

On the side opposite to these wheels, and outside of the frame B, I place another larger wheel, C, which, in the construction shown, is intended to be used as the driving-wheel. This wheel C is fixed upon the end of the shaft *c*, which has its bearing in the side frames, A B.

Inside of the frame, and next to the side piece, A, is a sleeve, *d*, which rotates with the shaft *c*, being fixed thereto in any suitable manner. This sleeve carries a ratchet-wheel, *e*, upon the inner end. The other part of the shaft is covered by a sleeve, *f*, which is loose upon the shaft, and may be revolved independently of it. The end of this sleeve, next to the sleeve *d*, is provided with a pinion, *g*, and is also provided with radial arms *h h*, which project outside of the periphery of the ratchet *e*, and carry pawls *i i*, attached to the said radial arms by screws *k k*. These pawls are held in contact with the ratchet-wheel *e* by means of a spring, *m*. The pawls are duplicated, simply for greater security.

Upon the upper part of the frame A B is pivoted a foot-plate, D, fitted to the foot of the user and resembling the ordinary plates used for that purpose in skates, and, like such skates, provided with devices, *n o*, for binding the foot of the user firmly thereto. This plate D is securely pivoted upon a shaft, *p*, upon which it may tilt freely.

It is provided with a segment-rack, E, secured firmly to the plate D at both ends, and at right angles to the surface of the said plate. It is so arranged in relation to the pinion *g* as to be accurately in gear therewith, and to impart to it rotary motion whenever the foot-piece D is oscillated.

It will be apparent, from an inspection of Fig. 2, that when the forward part of the plate D is depressed, and with it the forward part of the segment-rack E, the motion imparted to the pinion *g* and radial arms *h* will, through the pawls *i i* and ratchet *e*, rotate the sleeve *d*, and with it the wheel C, thus converting the supporting-wheel C into a drive-wheel and propelling the user forward over the ground. The plate D is so adjusted upon its pivotal bearing *p* that the foot of the user shall rest equally and comfortably thereupon, and the segment-rack is adapted to the ordinary mo-

tion of the foot upon the ankle in the act of walking.

As the whole weight of the body comes upon the plate D, any part of that weight which the user may desire may be thrown upon the forward part of the plate D, for the purpose of imparting rotary motion to the drive-wheel. At the same time, if this motion of the feet be arrested and the plate D held still, as may be desirable in going over an inclined surface, the arrangement of the pawls permits the drive-wheel to turn freely as the user goes forward, and in that case all the wheels become simply supporting-wheels.

It will be observed that the motion of the foot necessary to impart a rotary motion to the wheel C is exactly that motion exerted in the ordinary act of walking, as in that act the person walking rises upon the forward part of the foot and carries the weight of the body for an instant upon that part. The same muscular effort exerted by the person using my apparatus will depress the forward part of the plate D, so that the user is propelled by my apparatus with great rapidity by the same muscular exertion to which he is accustomed in walking, and it is in the construction which adapts the apparatus to this particular action of the foot that the essential principle of my invention relates.

It is plain that motion may be conveyed from the pivoted plate D to one or more of the supporting-wheels by means of other devices than the segment-rack and pinion, although I believe these to be the simplest and most efficient for the purpose.

The frame A B may be connected securely by suitable transverse bars, and it may be made of any material suited to the purpose, the construction in these respects and the material to be used being well known to those skilled in the art of metal-working.

The wheel should also have its periphery covered with rubber or some equivalent sub-

stances. These wheels may be made with broad or narrow treads, to suit the different kind of surface of the roads on which they are liable to be used.

Upon one of the wheels I have provided a brake, *g*, held out of contact with the wheel by a spring, but capable of being applied to the wheel by means of a wire or cord, *r*, the upper end of which may be provided with a hook or loop for attachment to some part of the clothing of the user, so as to be readily within his reach.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The improved device consisting of an oscillating foot-supporting plate, mounted upon wheels, and adapted to impart motion to one or more of the said wheels by the motion of the foot, as set forth.

2. The pivoted plate D, mounted upon a frame which moves upon supporting-wheels, said plate being connected to the shaft of one or more of the wheels by intermediate gear, whereby the depression of the forward part of the plate propels the device, as set forth.

3. The supporting-plate D, in combination with the segment-rack, the pinion upon the sleeve of the journal, and the fixed sleeve and connecting-pawl, as set forth.

4. The combination of the supporting-wheels *a a*, the drive-wheel C, the plate D, and the intermediate mechanism for transmitting motion from the said plate, as set forth.

5. The combination of the brake *g* and the cord or wire with *r* the wheel *a*, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD GORNALL.

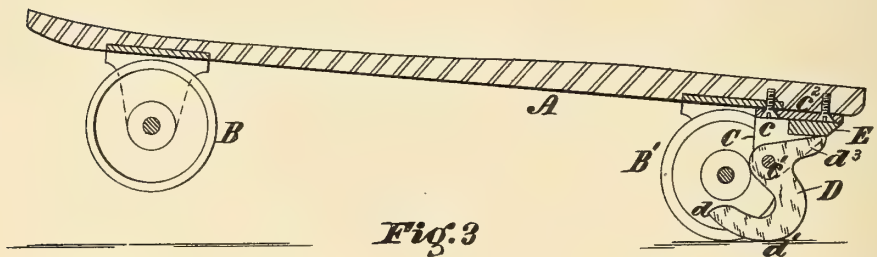
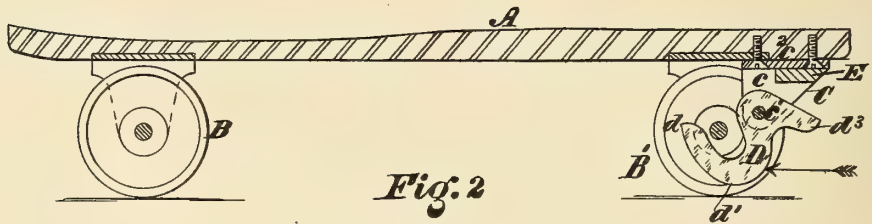
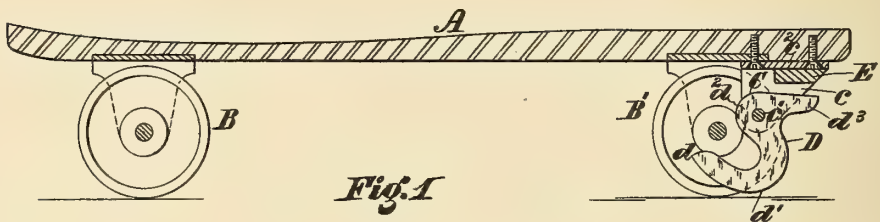
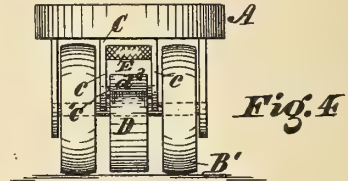
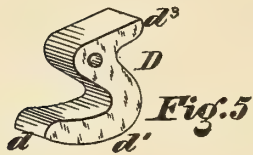
Witnesses:

CHAS. W. HANDY,
FRANK L. MIDDLETON.

A. FRENCH.
Roller-Skate.

No. 225,361.

Patented Mar. 9, 1880.



WITNESSES:
Saml. J. VanStavoren.
Jos B. Connolly

INVENTOR,
Andrew French,
By Connolly Bros.,
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANDREW FRENCH, OF PHILADELPHIA, PENNSYLVANIA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 225,361, dated March 9, 1880.

Application filed June 17, 1879.

To all whom it may concern:

Be it known that I, ANDREW FRENCH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Brakes for Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figures 1, 2, and 3 are longitudinal vertical sections of a skate with my improved brake applied thereto, illustrating the different positions the brake assumes under varying movements of the skate. Fig. 4 is an elevation of the rear end of the skate, and Fig. 5 is a perspective detail of the brake-shoe.

My invention has for its object to provide for a roller-skate a brake of such construction that it will come into operation when the toe of the skate is raised in going forward, but will not operate to interfere with the skate or impede its movement when rolling backward or when going forwardly with the front rollers on the floor or ground.

My invention has for its further object to prevent shock or jar resulting from the sudden application of a perfectly rigid brake.

My improvements consist, first, of a brake-shoe constructed as hereinafter described, and hung loosely between the rear or heel rollers of a skate, so that when the toe of the skate is raised in going forwardly said shoe will come in contact with the floor or ground beneath and operate as a brake, while when the skate is moving backward, or when going forward with the toe-rollers on the ground or floor, said shoe will be swung up and out of operative position; and, second, in the combination, with the brake-shoe, of a cushion or buffer so applied as to relieve or lessen the jar or shock occasioned by the meeting of said shoe with the surface of the floor or ground, and thereby prevent the too sudden stoppage of the forward movement of the skate.

Referring to the accompanying drawings, A indicates the foot-plate or body, and B and B', respectively, the front and rear or toe and

heel rollers, of a roller-skate of the usual or any suitable construction.

C represents a bracket or hanger secured to the foot-plate A, between the rear rollers, B', and having lugs or links *c*, which afford bearings or supports for a rod, *c'*, on which is loosely hung a brake-shoe, D. Said brake-shoe is of segmental form, its perimeter from *d* to *d'* being the segment of a circle described from the rod *c'* as a center.

*d*² shows the arm of the shoe through which the rod *c'* passes, and *d*³ a dog projecting rearwardly from said arm.

E is a rubber cushion or buffer fastened to the plate *c*² of the bracket C in such position that when the shoe D swings backwardly, as hereinafter described, the dog *d*³ will come in contact with said buffer or cushion and press upon it.

The operation is substantially as follows: When the skate is in use and moving forwardly or backwardly, with its front and rear rollers on the ground, the shoe D hangs in the position shown in Fig. 1, where it is inoperative, and where it will not affect or impede the movement of the skate. If in going backward the toe of the skate be raised, the shoe D will be brought in contact with the ground, but will swing forwardly, as shown in Fig. 2, causing the dog *d*³ to move farther away from the cushion E, and no brake action will be produced; but if the toe of the skate be raised in going forward, the shoe D will be brought into contact with the ground and caused to swing backwardly, raising the dog *d*³ until it meets and presses against the buffer or cushion E, as shown in Fig. 3. This will produce a brake action on the ground or floor, and will impede the forward movement of the skate, so as to prevent the skater's falling. By reason of the yielding of the cushion E sudden jar or shock will be avoided when the shoe comes in contact with the floor or ground, and the skate will not be suddenly and abruptly stopped.

By reason of the segmental construction of the shoe it will not act to further raise the toe of the skate when the brake is applied.

What I claim as my invention is—

1. The combination, with a roller-skate, of a swinging brake-shoe arranged at the heel of

the skate, and constructed and designed substantially as described, to operate when the toe of the skate is raised in going forward and to be inoperative when the skate is moving backward.

2. The swinging brake-shoe D, having a projection or dog, d^3 , which limits the backward swing of said shoe and produces a brake action, substantially as shown and set forth.

3. The swinging segmental shoe D, having its perimeter d d' described from the rod c' , on which said shoe is hung as a center, as set forth.

4. In combination with the swinging brake shoe D, having projection or dog d^3 , the buffer or cushion E, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand.

ANDREW FRENCH.

Witnesses:

GEO. C. SHELMEKDINE,
SAML. J. VAN STAVOREN.

E. CHESTERMAN.
Combined Runner and Roller Skate.

No. 226,835.

Patented April 27, 1880.

Fig. 1

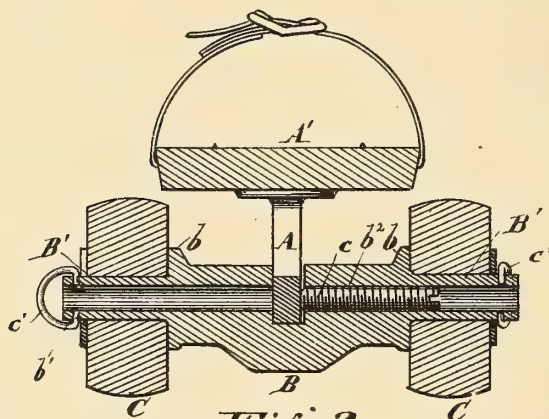
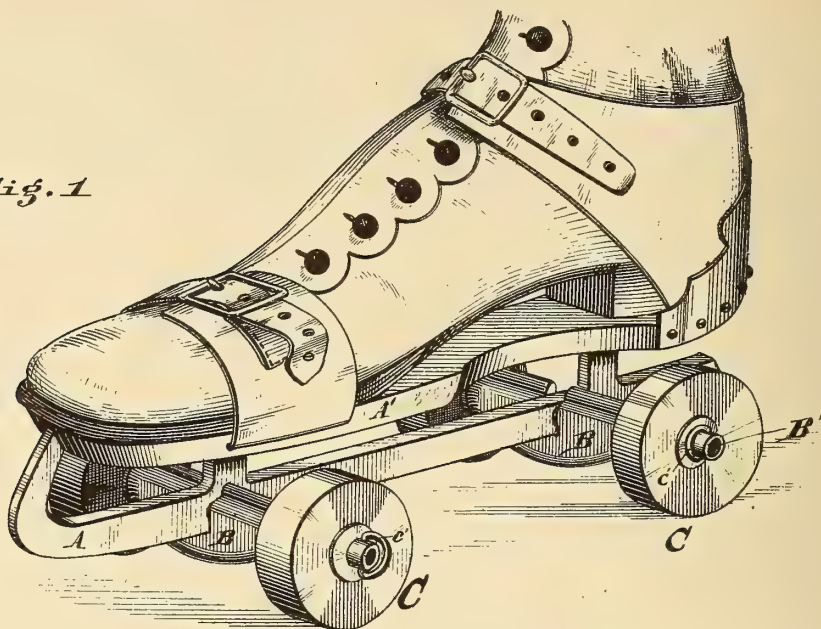


Fig. 2

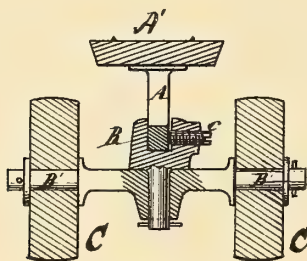


Fig. 3

Attests
Edwin Chesterman
Edwin

Inventor
Edwin Chesterman

UNITED STATES PATENT OFFICE.

EDWIN CHESTERMAN, OF PHILADELPHIA, PENNSYLVANIA.

COMBINED RUNNER AND ROLLER SKATE.

SPECIFICATION forming part of Letters Patent No. 226,835, dated April 27, 1880.

Application filed January 5, 1880.

To all whom it may concern:

Be it known that I, EDWIN CHESTERMAN, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Combined Runner and Roller Skate, which improvement is fully set forth in the following specification and accompanying drawings.

The object of this invention is to convert an ordinary runner-skate into a roller-skate without removing the runner.

The invention consists of rollers and axles, one or more, adapted to be attached to a runner-skate without removing the runner; also, of roller-frames and rollers, one or more, and a clamp or clamps, by which said roller-frames may be fastened to or removed from the runner of a skate; also, of the combination, with a runner-skate, of axles and rollers, one or more, in such manner that said axles and rollers may be readily attached or detached without removing the runner from its frame and without impairing said runner for its primal use.

Referring to the drawings, Figure 1 is a perspective, showing a runner-skate with my invention attached. Fig. 2 is a vertical section of my invention. Fig. 3 is a modification of my invention, showing the axle pivoted to the clamp to facilitate a curved movement.

A represents an ordinary runner-skate. A' is the sole-plate. B is a clamp, in the present case made with an axle or spindle, B', projecting on each side, which spindle is made hollow for the double purpose of diminishing its weight and to admit a screw by which the axles are attached to the skate A.

b is a collar formed on the axles. b' are holes for the linchpin, which will be hereinafter described. b² is a female screw formed in the hollow axle, and c is a screw by which the axle is clamped to the skate A.

C are rollers or wheels which revolve on the axles, and c' are linchpins by which said rollers are held on the axles. These linchpins are made of the form shown, the distance between the two shoulders being a little less than the diameter of the axles. The two ends or points projecting toward each other from said shoulders are of a length equal to the

thickness of the shell of the axle. When the roller is put on its axle and the linchpin sprung into its position said linchpin will press against the axle with force sufficient to hold its points in the holes and retain the rollers on said axles, and the hollow in the axles will be left unobstructed for the application of the proper tool to turn the set-screw, by which the axles B' are attached to or detached from the skate A.

Fig. 3 shows the clamp and axle made in separate pieces. The clamp has a pivot extending downward, and the axle is enlarged and provided with a tubular bearing in the middle, so that the axle may turn on the pivot of the clamp to facilitate a curved movement.

If desired, a clamp may be extended upward from the axle and fastened to the edges of the sole-plate instead of to the runner; or the clamp may be formed with clips or hooks to fit over the top edge of the sole-plate, in which case the clamp would be passed up over the runner to the top of the sole-plate at its narrowest part, and then moved forward or backward to the wider parts, and when in the right position a set-screw would be tightened and the clamp, with its axle and rollers, be firmly attached to the sole-plate.

This and other modifications may be made without departing from the spirit of this invention.

It will be readily seen that the herein-described attachment may be applied to any ordinary runner-skate by simply tightening the set-screw, and removed by loosening said screw, and that no alteration is required in the runner-skate; neither is said skate in any way injured.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with axles having rollers attached thereto, a clamp, B, and set-screw c, whereby said axles may be readily fastened to or removed from the runner of a skate without removing it from the sole-plate or impairing its use as a runner, substantially as set forth.

2. In combination with the skate-runner A, a hollow axle, B', having clamp B, female screw b², and set-screw c, with rollers C at

tached to said axle, substantially as and for the purpose described.

3. In combination with a runner-skate in which the runner extends the length of the sole-plate, axles having rollers attached there-
5 to, said axles being adapted to be attached to and detached from the skate without remov-

ing the runner from the sole-plate or impairing its use, substantially as and for the purpose set forth.

EDWIN CHESTERMAN,

Witnesses:

S. MCHENRY,

J. E. CHENEY.

G. RUSH, Jr.
Roller Skate.

No. 229,011.

Patented June 22, 1880.

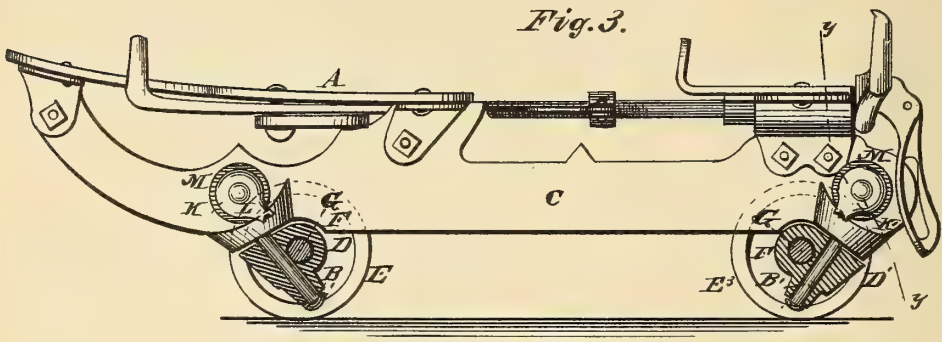
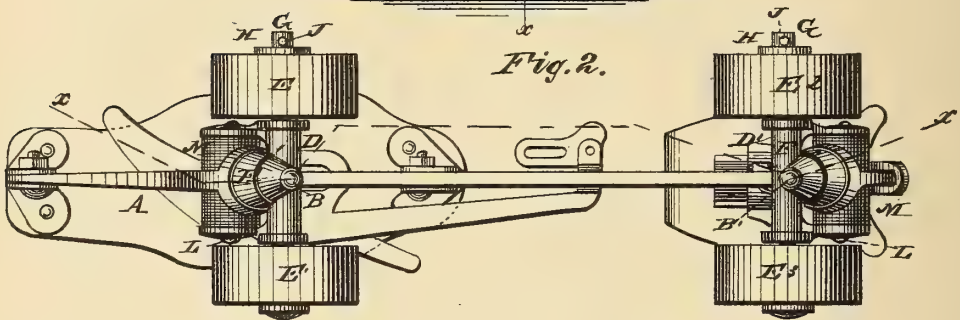
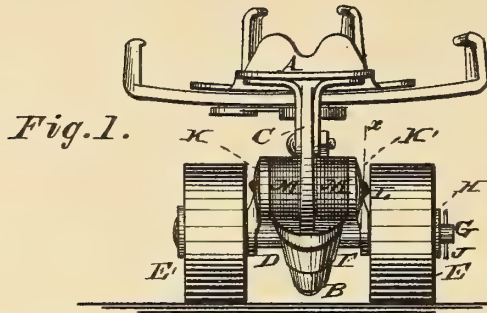
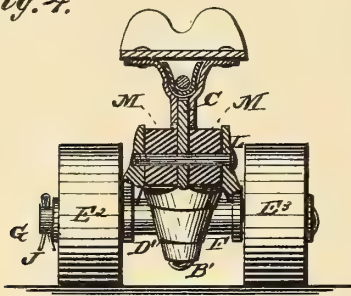


Fig. 4.



Witnesses:

P. C. Distenich
John Stockman

Inventor
Geo. Rush, Jr.
Per *Wm. H. Megand* Attorney

UNITED STATES PATENT OFFICE.

GEORGE RUSH, JR., OF PHILADELPHIA, PENNSYLVANIA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 229,011, dated June 22, 1880.

Application filed February 24, 1880.

To all whom it may concern:

Be it known that I, GEORGE RUSH, Jr., of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Roller-Skates, (which has not been patented to me in any foreign country, nor has it been patented with my knowledge by or to any person in any foreign country,) of which invention I do hereby declare the following is a sufficiently full, clear, and exact description to enable others skilled in the art to make and use the said invention, reference being had to the drawings annexed, and the letters of reference marked thereon.

My invention relates to that class of roller-skates in which the inclining of the sole laterally by the motion of the foot of the wearer causes the axles of the wheels or rollers to change from a parallel position to an inclined position toward each other, and thus cause the skate to roll in curved lines.

This invention consists in a novel, cheap, and useful mode of making the axles and applying the springs thereto, so that the force or resistance of the springs is readily adjusted and not liable to accidental change of adjustment.

Referring to the drawings, Figure 1 shows a front elevation; Fig. 2, a plan of the skate in inverted position; Fig. 3, a vertical section in the plane indicated by the dotted lines *x x* in Figs. 1 and 2, and Fig. 4 a section in the plane indicated by the dotted line *y y* in Fig. 3.

The same letters of reference apply to the same parts in the several figures.

A represents the skate-sole, which may be provided with any of the known means of attachment to the shoe or foot of the skater.

B and B' are spindles or studs projecting obliquely downward from the bar C, which occupies the same position in relation to the sole A as the runner of an ice-skate.

D and D' are axles turning upon the oblique spindles B and B', and bearing rollers marked E, E', E², and E³. The axles D and D' are formed in two parts, the portion F, between the rollers, being a single piece and tubular, and

receives a cylindrical bolt, G, which, fitting through both wheels and the tube in the piece F, is secured therein by a washer, H, and linch-pin J. The part of the axle marked F should be made of ductile metal, and is provided with projecting arms or levers (marked K and K') formed in one piece therewith.

Through the centers of the broad and flat ends of the levers K and K' a screw, L, is passed, having a head bearing against the outer surface of the lever K', and screws into a nut formed in the lever K. The effect of turning the screw L in one direction is to bend the levers K and K' toward each other. If turned in a reverse direction it permits them to be spread or bent apart.

Upon the screw L, between each of the levers K and K' and the bar C, is placed a spring, M, of rubber or other elastic material.

By tightening the screws L the levers K and K' are drawn toward the bar C, and the interposed springs M M are compressed, and their elastic force or resistance augmented. By loosening the screws L it is diminished. They thereby adjust the resistance of the springs to the canting of the skate-sole and the turning of the axle D and D' on the spindles B and B', by means of which the skater controls or changes his course.

The advantages of this invention are cheapness and simplicity of construction, the avoidance of loose parts and the rattling noise consequent thereon, and an easy graduation of the resistance of the spring to the weight of the skater.

Having fully described my invention, what I claim therein as new and useful, and as original with myself, is—

The combination, in roller-skates, of the axles D and D', provided with ductile metallic arms K and K', having the adjusting-screws L, with the springs M M M M and bar C, as and for the purpose set forth.

GEO. RUSH, JR.

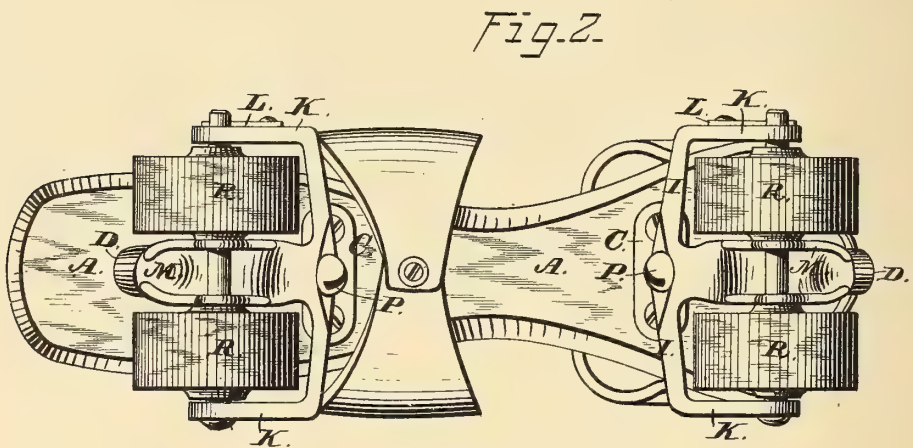
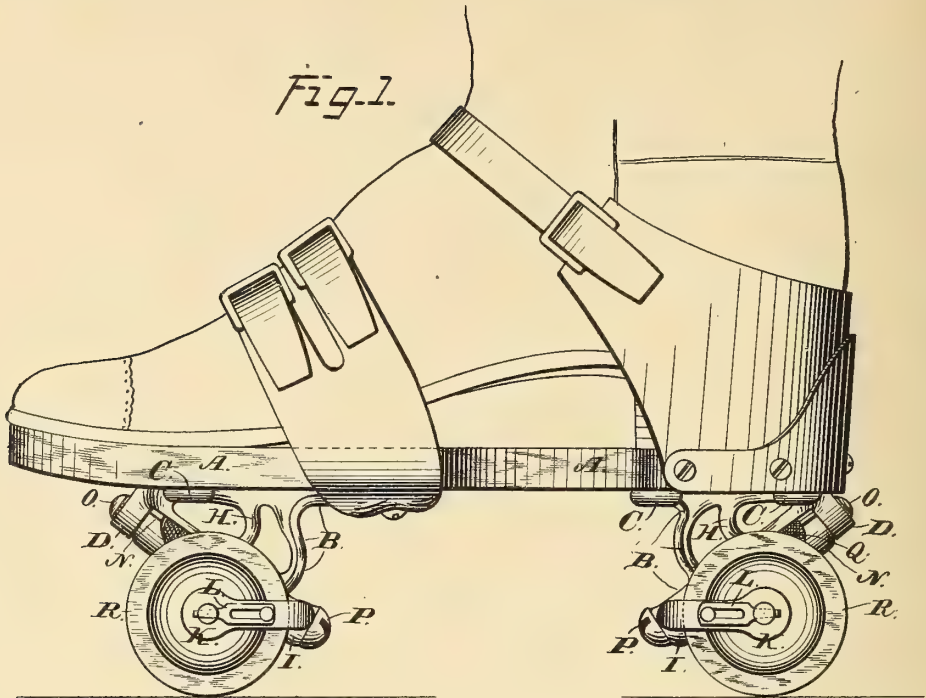
Witnesses:

JOS. L. GREENWALD,
J. DANIEL EBY.

S. WINSLOW.
Roller Skate.

No. 230,094.

Patented July 13, 1880.



WITNESSES=

Jas. E. Hutchinson.

J. A. Rutherford.

INVENTOR=

Sam'l Winslow,

by James L. Norris,
 Att'y.

S. WINSLOW.
Roller Skate.

No. 230,094.

Patented July 13, 1880.

Fig. 3.

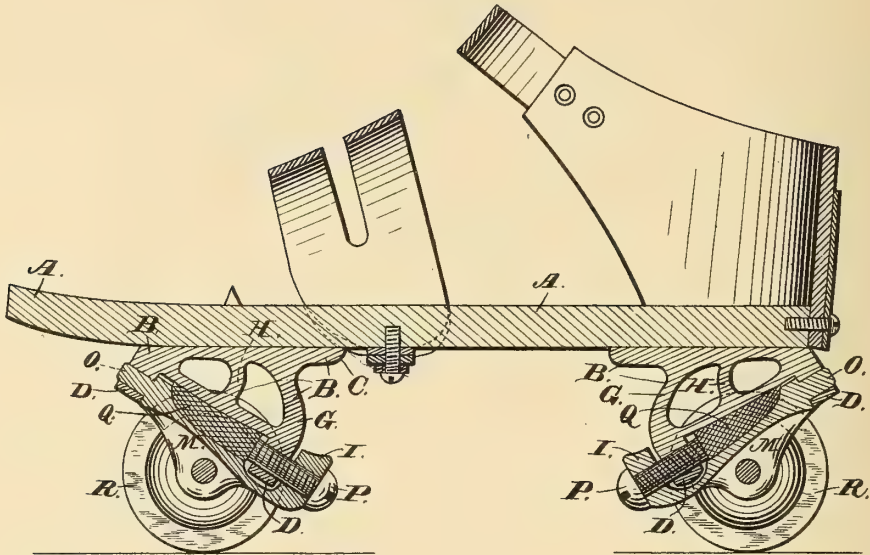


Fig. 4.

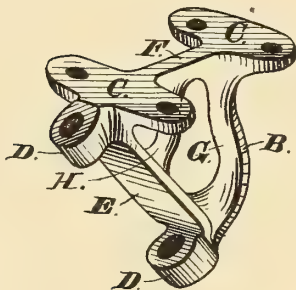
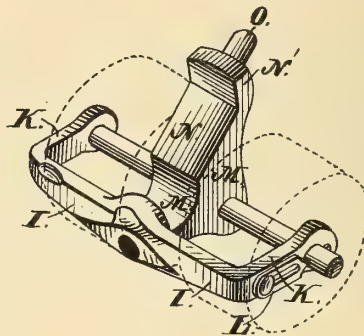


Fig. 5.



WITNESSES:

Jas. E. Hutchinson.
J. A. Rutherford

INVENTOR.

Sam'l Winslow,

by James L. Norris.
Att'y.

UNITED STATES PATENT OFFICE.

SAMUEL WINSLOW, OF WORCESTER, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 230,094, dated July 13, 1880.

Application filed January 10, 1880.

To all whom it may concern:

Be it known that I, SAMUEL WINSLOW, a citizen of the United States, residing at Worcester, in the county of Worcester, State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to that class known as "roller"-skates, and has for its object cheapness, lightness, strength, durability, and efficiency in action of an improved device for cramping or turning the rolls to the proper position for enabling the skate to run so as to describe circles to the right or left, and to guide the skate as desired while accomplishing complicated and dexterous movements.

In the accompanying drawings, Figure 1 represents a side elevation of a roller-skate with my improvements applied thereto. Fig. 2 is a bottom view of the same. Fig. 3 is a longitudinal central section; Fig. 4, a perspective view of the hanger, and Fig. 5 a perspective view of the roller-frame and rollers.

A designates the foot-standard or skate-block, to which are connected the heel and toe straps, as usual.

The two hangers B are firmly secured to the under side of the foot-stand by means of screws passed through holes which are formed in plates or wings C of the hangers.

As clearly illustrated in Fig. 4, the hanger is formed with two coupling-eyes, D D, and an inclined plate, E, which extends from one eye to the other. The portion of the hanger which is applied to the skate-block comprises the plates C C, with a connecting-web, F. The upper coupling-eye is located at the juncture of the inclined plate with one of the plates which is applied to the skate-block, while from the point at which the web merges into the remaining plate, which is applied in a similar way, there depends a bar, G, which extends down to the lower one of the eyes.

A central bar, H, connecting the web with the inclined plate, serves to add strength to the device.

The roller-frame comprises a straight bar, I, with two arms, K, at its ends. These arms are at right angles to the axis of the bar I, and constitute bearings for the roller-axis, which is secured against rotation and displacement by a slotted stop-piece, L, one end

of which passes into an aperture in the axle, while the other and slotted end is held against the arm by a screw or rivet. By loosening this screw or rivet the stop L may be moved along the arm so as to detach it from the axle. The axle can then be taken out for the purpose of removing one or both of the rollers, for the purpose of placing others in their stead.

The bar or plate M of the frame, which projects from the bar I intermediate of the arms K, but in a different plane from that in which they extend, is formed upon the under side with flanges, through which the roller-axle passes. This said plate is also formed upon its upper side with a flat bearing-surface, N, a depression, M', adjacent to its union with the bar, and it is also formed with an upwardly-curved end, N', which is rounded somewhat at its corners. At the end at which the depression occurs is a bolt-hole formed through the bar, while at the end which is curved or upturned is a projecting pintle, O. The object of these parts of the bar M will be comprehended by referring to the figures which show the hanger and the roller-frame coupled together. As thus viewed, the pintle O of the roller-frame is passed into the upper coupling-eye of the hanger, while the depression in the bar or plate M of the roller-frame admits of the remaining coupling-eye of the hanger being brought coincident with the bolt-hole through the bar I, so that a bolt passed through both apertures will complete the connection between the frame and the hanger, and also admit of the free rotation of the latter about the points of connection. As this motion takes place at an angle, it will bring the roller on either side of the skate nearer together by throwing their axes out of parallel and into converging lines. The upturned end N' of the roller-frame will prevent too great a motion from side to side, since the inclined plate of the hanger will strike against it when the turn is sufficient.

Between the inclined plate of the hanger and the central inclined plate, M, of the roller-frame sufficient space is left, after coupling, for an elastic cushion or strip, Q, which is clamped by and held in place between the said two parts. The inclined screw coupling-pin P, which serves as a pintle, also serves to keep this elastic

cushion in place by bearing against its end, and by tightening up the said screw-pin the cushion will be compressed, and hence its spring-resisting power increased. This spring aids in supporting the foot when the weight of the skater is brought to bear upon either side of the skate. It also prevents rattling of the parts, and will at all times be securely held in place by means of the plate and the screw.

It is evident that an independent screw might be substituted for the pintle O, which, as illustrated, is made integral with or permanently connected to the roller-frame. I prefer, however, the present form, and hence have so illustrated it.

The device described can be adapted to ice-skating by the substitution of runners for rollers, the slight mechanical change requisite for such being a matter too simple and apparent to require further description.

I am aware of the patent of J. L. Plimpton for a parlor-skate, which was granted June 26, 1866, and numbered 55,901, and I do not claim anything shown and described in said patent.

Having thus described my invention, what I claim is—

1. The combination, with the hanger B, provided with the coupling-eyes D D, arranged obliquely, of the roller-frame composed of a bar, I, with a screw-hole at its center, and having bent ends K K, a bar, M, connected at one end to said bar I and provided at the other end with a pivot-pin or journal, O, which fits in one of the eyes D, and a screw, P, passing through the hole in the bar I and through the other eye of the hanger, thus forming one of

the pivots of the roller-frame, the whole being constructed and arranged to operate substantially as described.

2. The combination, with the hanger having the inclined plate E terminating in eyes D D, of the roller-frame having the bar M, provided with the inclined face N and shoulder N', pivot pin or journal O, and recess or depression M', the bar I, connected to said bar M, and provided with a central hole and bent ends K K, the roller-shaft supported by said bent ends, and the bar M, the screw P, and the elastic cushion Q, arranged between the inclined plate E and the inclined face N, all constructed and arranged to operate substantially as described.

3. The combination, with the hanger having the inclined plate E and eyes D D, of the hanger-frame having the inclined face N, pivot O, and a suitably supported screw arranged to pass through one of the eyes D, and the elastic cushion Q, arranged between the inclined face N and plate E, in position to be compressed by said screw, substantially as described.

4. The combination, with the hanger and roller-frame coupled together, of an intermediate elastic cushion and the inclined screw coupling pin or pintle adapted to act directly upon the cushion, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL WINSLOW.

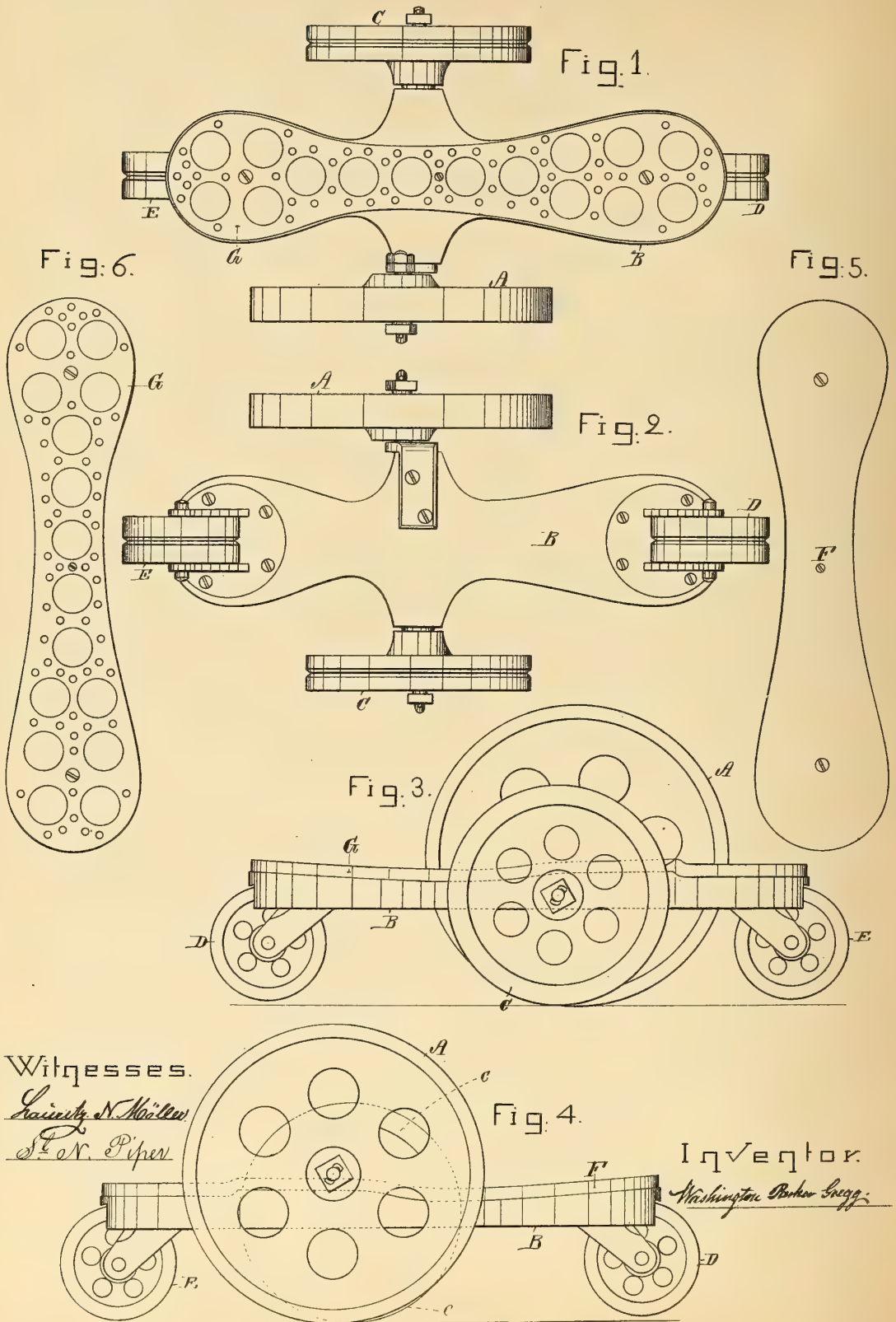
Witnesses:

JAMES L. NORRIS,
ALBERT H. NORRIS.

W. P. GREGG.
Roller Skate.

No. 233,845.

Patented Nov. 2, 1880.



Witnesses.

Samuel N. Martin
John N. Piper

Fig. 4.

Inventor.

Washington Parker Gregg

UNITED STATES PATENT OFFICE.

WASHINGTON P. GREGG, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 233,845, dated November 2, 1880.

Application filed December 31, 1879.

To all whom it may concern:

Be it known that I, WASHINGTON PARKER GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the nature of my said invention and the manner in which it is to be performed to be fully described in the following specification, reference being had to the accompanying drawings, which form a part thereof.

My present invention is an improvement on the roller-skates patented to me September 24, 1878, numbered 208,234, in which a large middle wheel is placed on the outer side and a smaller middle wheel on the inner side of the stock, the upper part of the rim of the smaller middle wheel being even, or nearly even, with the upper surface of the stock.

It is important for athletes and proficients to have at the inner side of the stock a middle wheel less in diameter than the outer middle wheel, and yet somewhat larger than they can, under the construction described in said patent, have an inner wheel with the upper part of its rim even, or nearly even, with the upper surface of the stock, unless the height of the stock from the ground were increased. In order to provide such inner wheel I have devised the improvements hereinafter set forth, whereby, among other advantages, may be obtained more speed and avoidance of liability of the foot bearing or slipping over the inner side of the stock.

My present invention consists in a novel construction, arrangement, or combination of the wheels, rollers, and stock of the skate, as herein set forth.

The accompanying drawings exhibit a skate embodying my improvements.

Figure 1 is a top view of the skate, with a large middle wheel on the outer side of the stock and a middle wheel less in diameter at the inner side of the stock, but with a part of its rim above the upper surface of the stock. Fig. 2 is a bottom view of the skate, with a large middle wheel on the outer side of the stock and said smaller middle wheel at the inner side of the stock. Fig. 3 is an inner side view of the skate, with its toe and heel rollers and the two middle wheels. Fig. 4 is

an outer side view of the skate, with its toe and heel rollers and larger middle wheel. Fig. 5 is an unperforated, and Fig. 6 a perforated, rubber facing, to be worn, when desired, upon the top of the stock.

In carrying out my invention I arrange one comparatively large middle wheel, A, as shown in Figs. 1, 2, 3, and 4, for side support, driving, and turning, on the outer side of the stock B near the ankle, and one smaller-sized middle wheel, C, for side support, driving, and turning, at the inner side of the stock, opposite, or nearly opposite, to the larger middle wheel, A, the upper part of the rim of the smaller middle wheel, C, being above the upper surface of the stock, instead of even, or nearly even, with said surface, as in my former patent referred to, and the hubs of the middle wheels being placed on axles in different planes, as shown, and so located that when the treads of both wheels are in the same horizontal plane the stock of the skate is also horizontal. By thus making the inner middle wheel smaller than the outer one and arranging it at the inner side of the stock, with the upper part of its rim above the upper surface of the stock, it will be seen that I am thereby enabled to have an inner middle wheel not only less in diameter than the outer one, but larger than I can have one at the inner side of the stock with the upper part of its rim even, or nearly even, with the upper surface of the stock without increasing the height of the stock from the ground, while at the same time, and what is not less important, there will not be that liability of the inner middle wheels interfering with each other during use which there would be were they as large in diameter as the larger outer middle wheels, nor the liability of the foot slipping or bearing over the inner side of the stock.

With the middle wheels, arranged and constructed as set forth, I combine one small roller, D, under the toe and one small roller, E, under the heel of the stock, to support the heel and toe. The middle wheels should extend down from the stock at least as low as the end rollers, and generally a little lower than the end rollers, to facilitate driving and turning. Each middle wheel, having a separate axle, may have its lower bearing a little nearer than that

of the other middle wheel toward the toe or the heel of the stock.

The stocks, wheels, rollers, their rims, (flat or rounded,) and the fixtures and fastenings may be of any suitable materials, size, and patterns.

As there are various ways of fastening axles to the stocks, I do not confine myself to any particular way. Some axles I fasten to the upper, some to the lower, surface of the stock, and some to the sides, or to brackets below or above the stock, according to the diameter and position of the wheels and rollers.

With a view to lessen sound sometimes arising from a roller-skate when used for a long time or much worn, as well as to render the skate more easy and agreeable to the foot, I place upon the upper surface of the stock a rubber facing, as shown in Figs. 1, 3, and 4, and separately in Figs. 5 and 6. It may be whole, as shown at F, or perforated, as at G. When whole it tends more to lessen sound than when perforated, when it is lighter and yet elastic. It may be used in either condition, as circumstances require. It is fastened to the stock by screws or any other known means, and easily removed at pleasure. In general I prefer it more or less perforated.

These skates are designed for all suitable surfaces, indoors and out.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is as follows:

1. In roller-skates constructed with a small supporting-roller under the toe and a similar supporting-roller under the heel of the stock, a middle wheel arranged at the inner side of the stock, with the upper part of its rim above the upper surface of the stock, in combination with a larger middle wheel arranged at the outer side of the stock, the hubs of the middle wheels being placed on axles in different planes and so located that when the treads of both wheels are in the same horizontal plane the stock of the skate is horizontal, substantially as and for the purposes described.

2. A skate constructed with a wheel arranged at the inner side of the middle of the stock, with the upper part of its rim above the upper surface of the stock, combined with a larger wheel arranged at the outer side of the middle of the stock, the hubs of the wheels placed on axles in different planes and located so that when the treads of both wheels are in the same horizontal line the stock of the skate is horizontal, as described.

Boston, Massachusetts, December 29, 1879.

WASHINGTON PARKER GREGG.

Witnesses:

LAURITZ N. MÖLLER,
SAMUEL N. PIPER.

M. C. HENLEY.
Roller Skate.

No. 234,404.

Patented Nov. 16, 1880.

Fig. 1

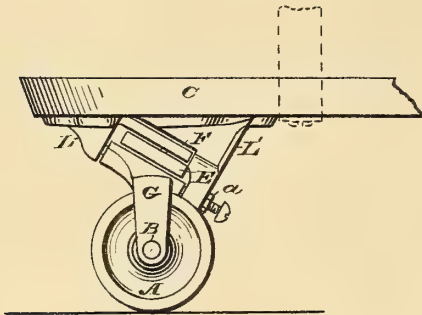


Fig. 2

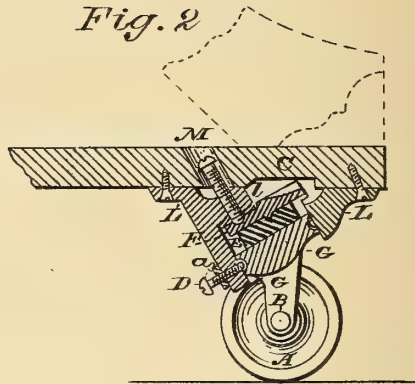


Fig. 3

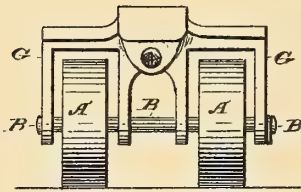


Fig. 4

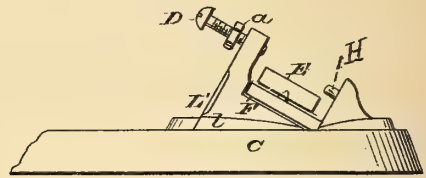
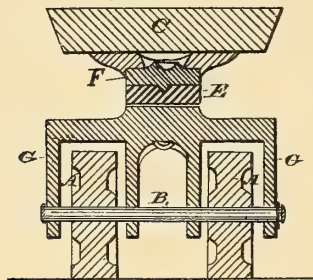


Fig. 5



Witnesses

A. E. Crocker
W. J. Dennis

Inventor

Michael C. Henley.

UNITED STATES PATENT OFFICE.

MICAJAH C. HENLEY, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 234,404, dated November 16, 1880.

Application filed February 27, 1880.

To all whom it may concern:

Be it known that I, MICAJAH C. HENLEY, of Richmond, Wayne county, Indiana, have invented certain new and useful Improvements in Roller-Skates; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the drawings which accompany this specification, forming a part of the same, and to the letters of reference marked thereon, in which—

Figure 1 is a side elevation of the front end of the skate. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is an end elevation of the truck or wheels and frame. Fig. 4 is an inverted plan of the platform of a section of the skate, showing the metallic frame by which the trucks or wheels are attached to the platform of the skate and the devices by which it is made adjustable and detachable. Fig. 5 is a vertical cross-section perpendicular to the line of the axle.

Like letters refer to like parts.

In Fig. 1, C is the platform or foot-piece of the skate. A is the wheel. B is the axle, and G & G is the gallows-frame which constitutes the hangers or supports for the axle B.

L L' are supports secured to the foot-piece of the skate, as shown in Fig. 2, the inside surfaces of which are at a suitable angle to the plane of the foot-piece C, L being the shorter and placed at the ends of the same, while L' is constructed with an angular top plate, *l*, forming the upper portion thereof, having an inclined horizontal plain surface.

The set-screw D passes through an opening in the lower portion of the support L', which opening is provided with a thread, in which the screw D is operated, said screw passing into the cap of the gallows or hanging frame G and resting in a recess therein, by which the point of the screw D forms a pivot, allowing the foot-piece C a rocking motion laterally. The screw D is provided with a jam-nut, *a*, fitting the thread of the same, and which works against the outer surface of the support L', thus securing the screw D rigidly in its position.

The cap of the frame G, and which forms the bearing of the same, is constructed with its upper surface in an angle parallel with the angle of the top plate, *l*, of the support L', and

forms the bearing for the spring E and the plate F. The plate F is made in nearly a square form, and is intended to move freely up and down between the inside surfaces of the supports L L', and is provided with a lug which receives the point of the screw M. It acts as a pressure-plate when it is operated by the screw M in regulating the tension of the spring E.

The plate F is provided on its opposite surface with a spur or any other suitable device, to hold the spring E, with which it is in direct contact, in place. The spring E, which is of rubber or any other suitable material, is of the same general form and size as the plate F, by which it is operated through the action of the screw M, by which a greater or lesser density is communicated to the spring, thus accommodating the skate to the weight of different persons using the same, as well as to regulate the flexibility of the lateral motion of the same. The screw M is let into the foot-piece of the skate by an opening in the same at an angle in the direction of the plate F upon which it rests, and is held in place by the operation of its thread in the support L'.

The cap of the gallows or hanger frame G is provided with recesses on its front and back surfaces, fitted to receive the screw D on one side and the lug H of the support L on the other, permitting the lateral or rocking motion of the foot on the gallows-frame and wheels.

The wheels and axles are of the common form, and may be made of any desirable size, and any of the ordinary or well-known devices used for holding the wheels in place on the axles may be employed.

It will be seen that by removing the set-screw D the cap of the gallows-frame G, with its attachments, is readily removed and the wheels or trucks disconnected from the platform or foot-piece C, as shown in Fig. 4.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The plate F, when arranged to move freely between the inside surface of the supports L L', and provided with a lug to receive the point of the screw M, the said plate being of a rectangular form, and in its operation serv-

ing as a pressure-plate when operated by the screw M, regulating the tension of the spring E, with which it is combined, and which is arranged, as described, to hold the spring E in
5 place.

2. The adjustable plate F and the screw M, in combination with the spring E and foot-piece C, as and for the purposes set forth and described.

10 3. The gallows-frame G, in combination with

the supports L and L', the set-screw D, and jam-nut *a*, all arranged and operating in the manner and for the purposes as described.

4. The combination of the screw D, lug H, and gallows-frame G, when operating in the manner and for the purpose as described.

MICAJAH C. HENLEY.

Witnesses:

W. T. DENNIS,

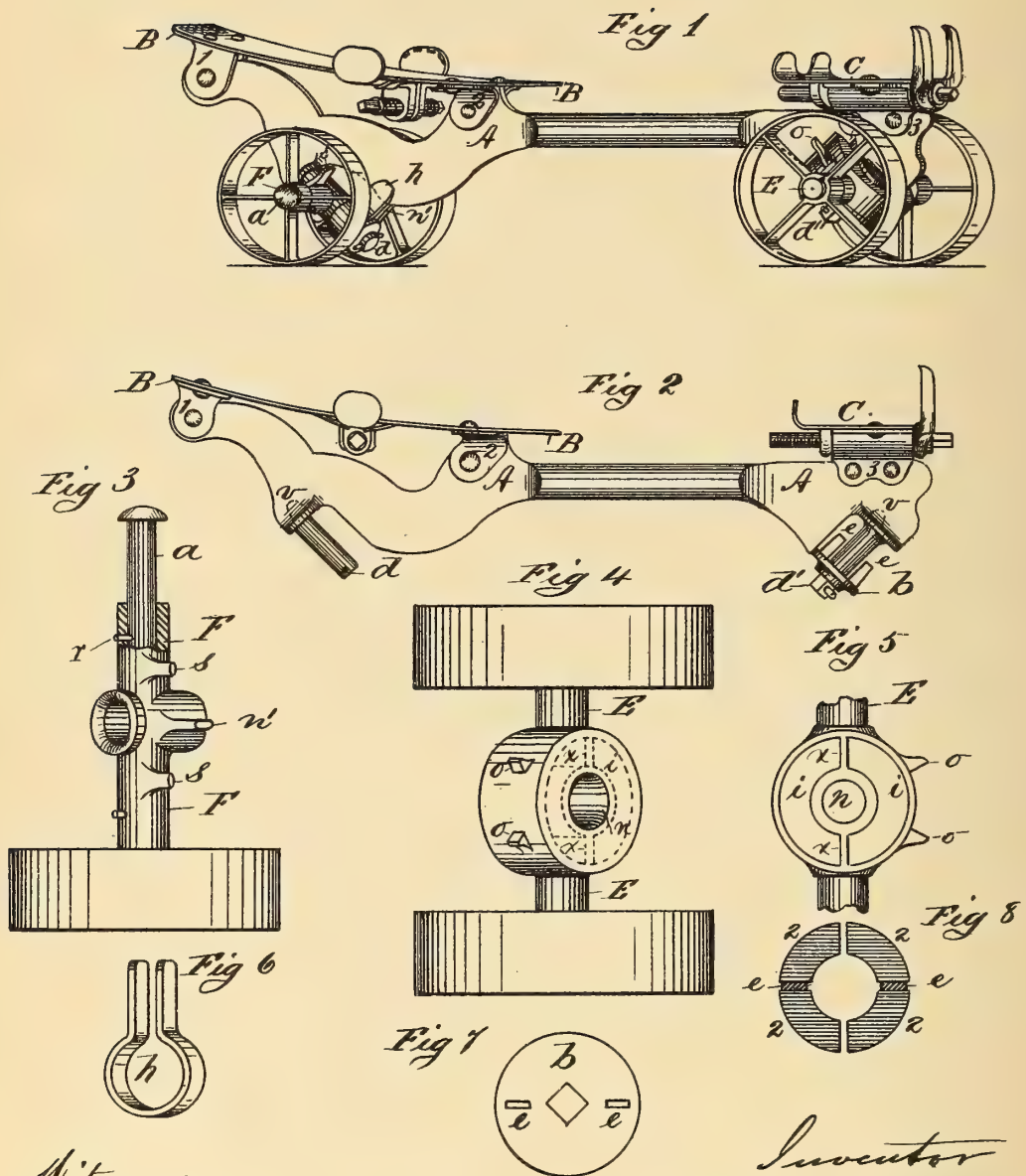
SAUL C. DAVIS.

(Model.)

E. H. BARNEY.
Roller Skate.

No. 235,666.

Patented Dec. 21, 1880.



Witnesses
Wm H Chapin.
L C. Rodier

Inventor
E. H. Barney
By Henry A. Chapin
att'y.

UNITED STATES PATENT OFFICE.

EVERETT H. BARNEY, OF SPRINGFIELD, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 235,666, dated December 21, 1880.

Application filed March 10, 1880. (Model.)

To all whom it may concern:

Be it known that I, EVERETT H. BARNEY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification.

My invention relates to skates which are adapted to be used upon floors and other smooth surfaces rather than upon ice; and the objects of my invention are to so combine metallic or other rollers and roller-supporting devices, together with metallic sole and heel plates, upon a metallic frame as to produce an improved skate of this class in relation to lightness, strength, and symmetry of proportions; to provide improved retracting-springs for the axles and improved axle-skins, and to adapt to such skates screw-clamp fastenings in place of straps. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my entire skate. Fig. 2 is a side elevation of the skate with the wheels and axles removed therefrom. Fig. 3 is a view of the forward axle, partly in section. Fig. 4 is a view of the rear axle with both wheels thereon. Fig. 5 is a view of the under side and central portion of the rear axle. Fig. 6 is a view of the forward axle-retracting spring. Fig. 7 is a plan view of the two-armed rear axle-plate; and Fig. 8 is a plan view of box-springs fitting the hollow central portion of the rear axle, showing between the segments thereof the ends of the two arms of the rear axle-plate.

Like letters refer to like parts in the different views.

The metallic frame A constitutes a support for the sole-plate B and for the heel-plate C, which plates are secured to said frame by the riveted brackets 1 2 3. The metallic screw-clamping devices shown on the sole-plate are fully described in the United States Patent to Coe and Sniffen, dated May 3, 1859, No. 23,826, extended April 29, 1873, for seven years; and the metallic screw-clamping devices shown on the heel-plate are such as are shown and described in my United States Patent dated February 19, 1878, No. 200,424. The strong intermediate portion of frame A between the forward and rear wheels of the

skate, which is sufficiently rigid to insure uniform vibrating action in both axles when the skate is rocked laterally, also permits of constructing the sole and heel plates of separate light metallic plates, and said construction and combination of the frame A and plates B and C conduce to make those essential portions of the skate light, strong, and symmetrical. Under the sole and heel plates the frame A is made of a considerable width vertically, as shown, and onto those portions are fixed the axle-bolts $d d'$, the latter being of one piece with the frame, and inclined, as shown. The front axle-bolt, d , is round from end to end, and provided with a pin-hole, as shown; but the rear one, d' , is square at its lower end, and likewise has a pin-hole pierced through it. Fitted to said squared end of bolt d' , so that it cannot turn thereon, is the rear axle-plate, b , having the arms e projecting from its inner face, as seen in Fig. 2.

The rear axle, E, is constructed with an annular chamber, i , surrounding the bolt-hole n therein, and said annular chamber is divided into two portions, as shown in Fig. 5, by the spring-abutments $x x$. The relative depth of chamber i as compared to the diameter of axle E is shown in Fig. 4.

When the axle E is in place on bolt d' , as in Fig. 1, the upper face of the cylindrical box-like foundation on said axle-surrounding chamber i (seen in Figs. 1, 4, and 5) bears against a flange on frame A at the base of said bolt, and the axle-plate b , with its arms $e e$ projecting into chamber i midway between the spring-abutments $x x$, is placed on the lower square end of bolt d' , covering the open side of chamber i , and is secured in that position by a pin or other suitable means.

It will be seen that when axle E and plate b are placed upon bolt d' , as above set forth, chamber i is divided into four compartments by the spring-abutments $x x$, which are fixed therein, and by the inwardly-projecting arms e , which are fixed to plate b , and with no interposed resistance between arms e and said abutments axle E may vibrate freely within certain limits on bolt d . Therefore, to cause said axle to be held with a certain force in a position at right angles to frame A, I interpose in chamber i , between the said abutments x and the fixed arms e on plate b , a resilient material,

either of rubber or a suitable metallic steady-
ing and retracting spring, which acts between
said arms and abutments, pressing them apart,
causing the axle to be held as aforesaid, and
operating it on bolt *d'*, and causing it to swing
to a position at right angles to frame A.

Fig. 8 is a plan view of a series of rubber
segments, 2, of proper dimensions to fit into
chamber *i*, adapted to be placed therein be-
tween said arms and the abutments *x*, to act as
springs for the purpose above set forth, and
in said figure is shown the position of arms
e between the segments, the open spaces be-
tween them providing places for the said abut-
ments *x*. The said segments 2 may be re-
placed with a rubber ring of suitable dimen-
sions to fit chamber *i*, and adapted to receive
into holes perforated longitudinally in its ends
projecting posts in said chamber in place of
said abutments *x*; and suitable arms on plate,
to fit said holes, instead of arms *e*.

On the outside of the casing surrounding
chamber *i* are fixed two stop-blocks, *o*, (seen
in Figs. 1, 4, and 5,) which serve to limit the
vibratory movement of axle E on bolt *d* by
striking against the side of frame A when said
axle has swung around as far as it may be re-
quired to. The wheels of the axle E are se-
cured thereon by a pin and washer in the usual
way. At the base of pins *d d'*, I provide pock-
ets *v* for holding a lubricating material.

F is the forward axle, and is adapted to op-
erate on bolt *d*, so far as to vibrate thereon
under frame A in like manner to axle E; but
its retracting and steadying spring is of differ-
ent construction and application to that whose
action, in governing the movements of axle E,
has just been described. Axle F has a free
vibratory movement on bolt *d*, within the limits
permitted by the position of the stop-blocks *s*
on the axle, which strike against the sides
of frame A when said axle swings around on
said bolt.

The bolt-socket on axle F is of tubular form,
as shown in Figs. 1 and 3, and is provided with
an arm, *n'*, projecting at right angles there-
from, and when said axle is placed on bolt *d*
a spring, *h*, Fig. 6, is put upon the lower end
of said bolt-socket, with arm *n'* interposed be-
tween the parallel arms of said spring, but not
reaching to the ends of them. Said parallel
arms of spring *h* are of sufficient length beyond
the end of arm *n'* to extend up against the sides
of frame A, as seen in Fig. 1, causing axle F
to be held firmly at right angles to frame A,
while the end of arm *n'* may swing clear of
the lower edge of said frame. Thus when
axle F swings on bolt *d* arm *n'* is caused to
press against one of the parallel arms of spring
h, forcing it away from the side of frame A
and from its opposite arm, which bears against

the opposite side of said frame; but when the
force which caused axle F to swing on said
bolt ceases to act the said arm of spring *h*
springs back against the side of frame A, caus-
ing said axle to reassume a position at right
angles to the frame.

The usual construction of the devices for
fastening the wheels or rollers of skates of this
class upon their axles causes more or less in-
convenience to the wearer by providing pins
upon which their garments get caught, and to
obviate that difficulty I provide such a con-
struction of the axle-skein as is shown in Fig.
3. In said construction I bore into the ends
of the axles, as shown, and make the skein
a in the form of a half-round-headed bolt,
which I fit into the bored-out end of the axle,
and drive a pin, *r*, through the axle and skein,
to secure the parts firmly together after the
wheel is in place on the skein, between the
head thereof and the end of the axle. The
aforesaid manner of constructing said skein
provides such a smooth exterior form and
finish beyond the end of the wheel-hub as
quite obviate the above-named difficulty, aris-
ing from the use of pins and similar devices.
The swinging of the axles of this skate on
their bolts *d d'* by the lateral rocking motion
of the frame A, and consequent inclination
sidewise of said bolts, is a well-known result
of such constructions, and hence the opera-
tion of the combined parts of this skate re-
quires no further description.

What I claim as my invention is—

1. The combination, with the skate-frame
and its inclined bolt, of a detachable armed
plate, *b*, the axle E, provided with chambers
adapted to receive said arms, and springs ar-
ranged in said chambers between abutments
thereof and the arms of the plate, substan-
tially as set forth.

2. The combination, in a roller-skate, of the
frame A and axles E F, provided with stops
o s and springs *h i*, the frame extending be-
tween said stops and constituting bearings
therefor, substantially as set forth.

3. The combination of the frame, its inclined
axle-bolt, axle having a hub receiving said
bolt and provided with a lug, *n'*, and spring
h, embracing the hub and having arms ex-
tending past the lug and overlapping the
frame, substantially as set forth.

4. The combination, with a roller-skate frame,
of an axle recessed at each end, and axle-skeins
each fitting and secured in one of said recesses
and provided with a stationary head securing
one of the wheels, as set forth.

EVERETT H. BARNEY.

Witnesses:

WM. H. CHAPIN,
N. O. CHAPIN.

J. MACKAY.
Roller Skate.

No. 235,887.

Patented Dec. 28, 1880.

FIG 11

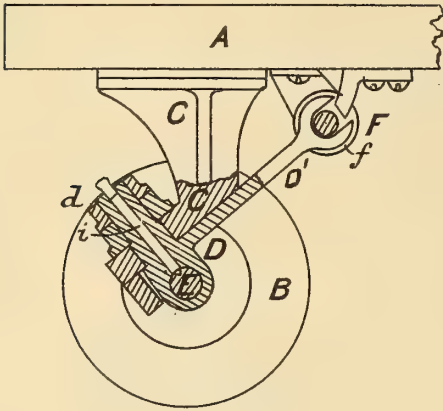


FIG 12

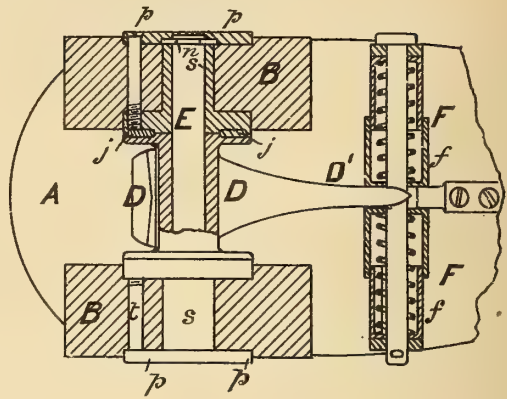


FIG 13



FIG 16

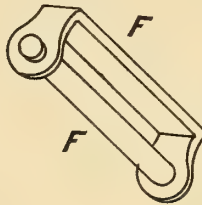


FIG 19

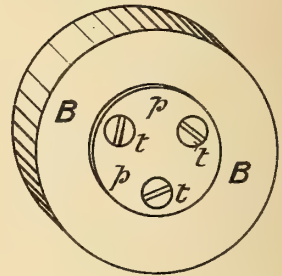


FIG 14

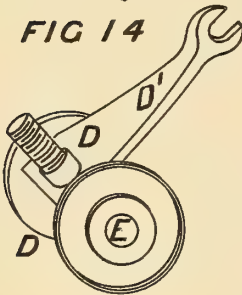


FIG 17

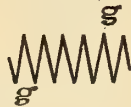


FIG 20

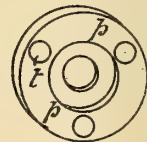


FIG 18

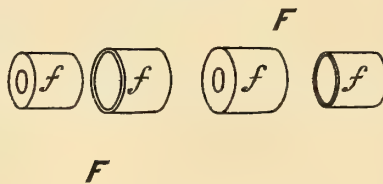
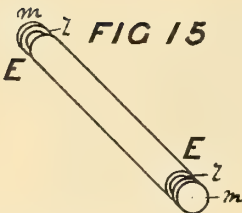


FIG 21



FIG 15



WITNESSES

H. C. Hudson
Wm. H. Broadnax

INVENTOR

James Mackay By
Attorney

UNITED STATES PATENT OFFICE.

JAMES MACKAY, OF LIVERPOOL, COUNTY OF LANCASTER, ENGLAND.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 235,887, dated December 28, 1880.

Application filed June 14, 1879. Patented in England June 6, 1878.

To all whom it may concern:

Be it known that I, JAMES MACKAY, of Liverpool, in the county of Lancaster, in that part of the United Kingdom of Great Britain and Ireland called England, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention is intended as an improvement upon the present method of attaching the rollers or runners to the foot-stock of a roller-skate, and on the method of controlling the action of said rollers or runners and lubricating the axles thereof.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe the construction and operation, referring to the annexed drawings, in which like letters are used to denote the same or corresponding parts.

Figure 1 represents a side elevation of a roller-skate fitted with brackets and controlling mechanism and having the rollers mounted according to this invention. Fig. 2 is a back view of the heel-rollers, Fig. 1. Fig. 3 is a back view of the toe-rollers, Fig. 1. Fig. 4 is a plan of Fig. 2, viewed from the under side, shown partly in section. Fig. 5 is a plan of Fig. 3, viewed from the under side, shown partly in section. Fig. 6 is a perspective view of a roller according to my invention. Figs. 7, 8, and 9 are details of Fig. 6. Fig. 10 is a plan of the axle for carrying the rollers constructed according to my invention. Fig. 11 is an elevation illustrating a modification of my invention. Fig. 12 is a plan of Fig. 11, viewed from the under side and shown partly in section. Figs. 13, 14, 15, 16, 17, 18, 19, 20, and 21 are details of Figs. 11 and 12.

A is the foot-stock of the skate; B, the rollers; C, the fixed bracket; D, the moving bracket; E, the axle. F is the controlling mechanism, which regulates the movement of the foot-stock and the radiation of the rollers B.

It will be seen that the bracket C has an in-

clined face, C', on which fits and works, by means of the pivot *d*, the moving portion or second bracket, D.

The moving bracket D, in the arrangement shown at Figs. 1 to 10, is provided with horns *e*, which embrace the controlling mechanism F. (See Figs. 3, 4, and 5.)

The controlling mechanism F consists of the barrel *f*, which is cast on and forms part of the bracket C. The barrel *f* contains a spiral spring, *g*, and the telescopic pins or nipples *h*, (see Fig. 4,) the ends of which, *h'*, bear on the horns or arms *e*, before referred to as forming part of the moving bracket D.

The moving bracket D is provided with an oil cup or receiver, *i*, which may be placed as shown at Figs. 1 and 4 or as shown at Fig. 11, the axle E being grooved, as shown at Fig. 10, for distributing the lubricant. Between the moving bracket D and the wheel B, I place a leather washer, *j*.

The method of fitting and retaining the rollers B on their axles E according to my invention will be seen upon reference to Figs. 4 to 10. The roller B is formed with a recess, *k*, and the axle E is formed with grooves *l* and collars *m*. In the groove *l* there fits a retaining washer or disk, *n*, made in halves. (See Fig. 9.) This washer *n* keeps the washer-plate *p* in position on the axle E, the halves of the washer *n* being kept together by the ring *r*. The position of the parts will be understood upon reference to Figs. 4 and 8. The roller B is provided with a bush, S, into which the end of the axle E takes. The wheel B is retained on the axle E by means of the screws *t*, which screw into the plate *p*. (See Fig. 5.)

The modification shown in Figs. 11 to 21 consists in covering in the controlling mechanism F, which is fitted to the foot-stock A, as shown at Fig. 12. The horns *e*, as shown in Fig. 4, are dispensed with, and the bracket D is provided with a tongue, D', which radiates on and is controlled by the spring telescopic mechanism F, the detail of which will be understood upon reference to Figs. 13, 14, 16, 17, and 18.

The axle E is illustrated at Fig. 15, and is a modification on that shown at Fig. 10, and is provided with grooves *l* and collars *m*. The plate *p* and the divided washer *n* fit on the

outside of the roller, as shown at Fig. 12, and the roller is secured by screws *t*, the principle of attachment being similar to that shown at Fig. 4.

5 From the foregoing it will be seen that a roller-skate constructed with brackets, controlling mechanism, and having the rollers retained according to this invention has the advantage of being self-lubricating through the
 10 oil-cups *i* and the grooved axles *E*, the surplus oil being wiped up by the leather washer *j*. The bushes and roller-retaining parts are completely covered in and split pins are dispensed with; also, the controlling mechanism
 15 *F* is incased, and dust and foreign matter cannot enter and clog any of the working parts of the skate, which can be easily wiped and kept clean, free from dirt.

Having thus fully described my invention,

what I claim as new, and desire to secure by 20 Letters Patent, is—

1. The combination of the arm *D* and the inclosed spring-governor *F* with the axle *E*, the several parts to be constructed and arranged with reference to each other substantially as described, for the purpose specified. 25

2. As an improvement in roller-skates, the combination of the collar *m*, divided washer *n*, ring *r*, and plate *p* with the groove *l*, roller *B*, and washer *j*, for the purpose of securing 30 the roller to the axle *E*, substantially as described.

JAMES MACKAY.

Witnesses:

FREDERICK JOHN CHEESBROUGH,

JOHN HAMILTON REDMOND,

Both of 15 Water Street, Liverpool, England.

(No Model.)

S. M. TINKHAM.
Roller Skate.

No. 236,113.

Patented Dec. 28, 1880.

Fig. 1.

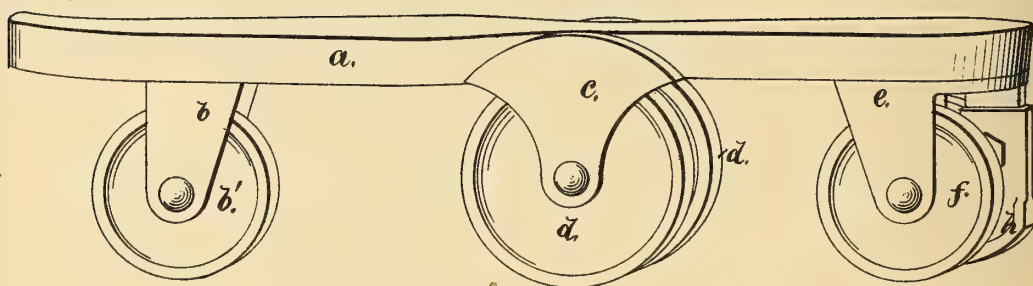


Fig. 2.

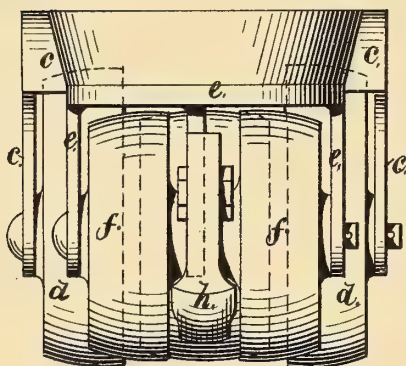
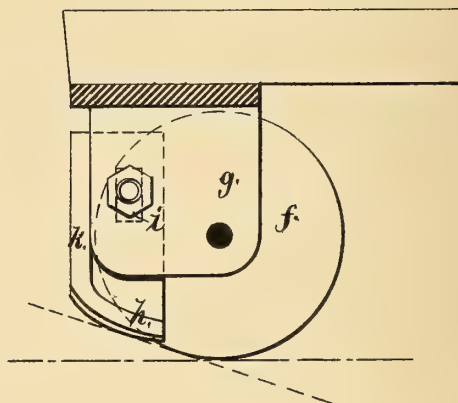


Fig. 3.



WITNESSES:

James A. Tinkham,
Geo. H. Babbitt,

INVENTOR:

S. M. Tinkham,
by Joseph A. Miller,
att'y

UNITED STATES PATENT OFFICE.

SAMUEL M. TINKHAM, OF TAUNTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 236,113, dated December 28, 1880.

Application filed May 31, 1880. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL M. TINKHAM, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Roller-Skates; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to facilitate the use of the roller-skate by beginners, to enable the skater to perform evolutions and turns more readily, reduce the resistance, and secure a firmer support to the skater.

The invention consists in providing a skate with five wheels or rollers, constructed as hereinafter specified, the two wheels near the center to be wider apart than the rear rollers and of larger diameter.

It further consists in providing an adjustable stop by which the rolling can be quickly arrested, and in curving the rim of the wheels or rollers, as will be more fully set forth hereinafter.

Figure 1 is a perspective view of my improved roller-skate. Fig. 2 is an end view of the same, and Fig. 3 is a view showing the adjustable stop.

In the drawings, *a* represents the foot-piece of a roller-skate, usually provided with straps or other means by which it is secured to the boot or shoe.

b is a bracket secured to the under side of the foot-piece *a*, at the toe or front end of the skate, to form a support for the axle of the wheel or roller *b'*.

c is a bracket secured to the narrow part of the foot-piece, below the instep of the boot or shoe, and, extending down, secures bearings for the two large wheels or rollers *d d*. The rollers are set as far as convenient apart, so as to give a firmer bearing to the skater.

e is a bracket forming a bearing at the heel end of the foot-piece for the rollers or wheels *f f*. This bracket is also provided with the central web, *g*, to which the adjustable stop *h* is secured by means of a screw passing through the elongated slot *i*, so that the stop may be adjusted to any desired height from the floor.

The stop *h* is provided with a projecting rim, *k*, which bears against the edge of the web *g*

to form a rigid support for itself. The lower end of the stop *h* is curved, and is made of a width about equal to the distance between the wheels *f f*, so as to secure a firm bearing-surface. The curved end of the stop may be covered with rubber or any other material, to prevent injury to the floor.

For new beginners the stop may be adjusted so as to be near the floor, when a slight raising of the toe will bring the stop in contact with the floor and stop the skate, thus preventing many falls, to which new beginners are liable.

The first result usual to a beginner attempting the use of roller-skates is the rolling of the skate from under the novice and a sudden fall of the individual. By my invention the stop *h*, by coming in contact with the floor, prevents the rolling of the skate, and enables the skater to recover his equilibrium.

To skaters familiar with the use of roller-skates the stop, even if raised considerably above the floor, is a great acquisition, as it enables them to stop themselves almost instantly, which, in many exercises, is of great importance, particularly so when the game of polo or other games are played on roller-skates.

The bearing-surface of the roller *b'* is curved so as to bear only near the center, and the bearing-surfaces of the wheels or rollers *d d* and *f f* are curved outward, so that the inner diameter of the same is larger than the outer, as is shown in Fig. 2. By this construction curves can be more readily described than when the bearing-surface is flat.

It is preferable to have the central wheels, *d d*, extend below the wheels *b'* and *f f*, so that the weight may be transferred to the central wheels only, to the central wheels and the front or toe wheel, or to the central wheels and rear or heel wheels, at the pleasure of the skater; or the central wheels may be at the same distance from the foot-piece as the heel-wheels, and the toe-wheel may be a slightly less distance from the foot-piece, so that the normal bearing is on the wheels *d d* and *f f*, and the front wheel, *b'*, may be used as desired. As the heel-wheels *f f* are closer together than the central wheels, *d d*, the bearing is more firm, and curves can be more readily described.

The skate can be used for ornamental or

fancy skating with more security and ease to the skater than skates as heretofore constructed.

5 Sheets of rubber or other elastic material may be placed between the metal brackets and the foot-piece to break the jar, and the wheels or rollers may be provided with rubber or other elastic tires.

10 By providing four wheels at the rear and one in front a firm base is secured when running, and a good hold on the front or toe wheel when striking out with the other skate, advantages which cannot be secured in a four-roller skate. In turning some of the ornamental figures one skate bears lightly on the floor while the other 15 bears the weight by bearing on one of the wheels *d*. On the toe-wheel *b'* shorter curves can be described than with ordinary skates, as the wheels *d* are set much farther apart, and the plane of the wheels *d d* and the wheel 20 *b'* are farther apart than the planes of the wheels *d d* and the wheels *f f*.

The usual refinements in the axle-bearings and oiling devices now used can be applied to these roller-skates, and the wheels may be 45 made of any desired kind of wood, metal, or other suitable material, and, if desired, all the brackets may be formed on one plate.

30 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A roller-skate provided with two central wheels having rims curved on an incline, two heel-wheels having rims similarly curved, and one toe-wheel, all arranged to operate substantially as and for the purpose described. 35

2. A roller-skate provided with two central wheels, two heel-wheels, the said wheels having larger diameters on their internal than on their external faces, and one toe-wheel, the rim of the toe-wheel being a less distance from 40 the foot-piece than the other wheels, as described.

3. In a roller-skate, the large central wheels, *d d*, having outwardly-inclined rims, the heel-wheels *f*, also having outwardly-inclined rims, 45 and the toe-wheel *b'*, having a central rim-bearing, the wheels *d d* being wider apart than the wheels *f f*, and all arranged and operating substantially as specified.

4. The combination, with a roller-skate, of 50 the stop *h*, made adjustable to suit the skater, as described.

5. The combination, with a roller-skate, of the web *g*, provided with the slot *i* and the adjustable stop, arranged to operate as de- 55 scribed.

S. M. TINKHAM.

Witnesses:

JAMES A. TINKHAM,
GEO. H. BABBITT.

(No Model.)

A. WOOD.
Roller Skate.

No. 237,152.

Patented Feb. 1, 1881.

Fig. 1.

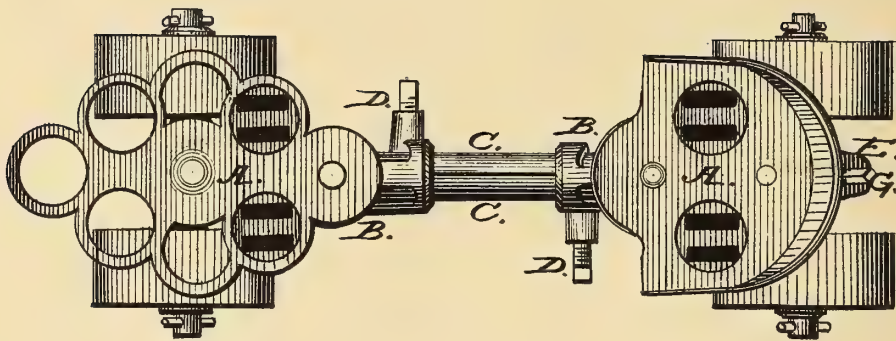


Fig. 2.

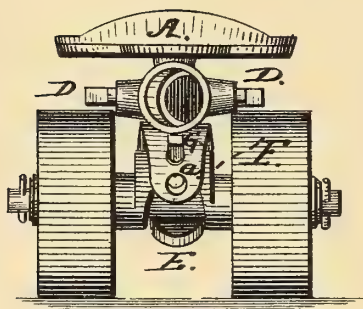
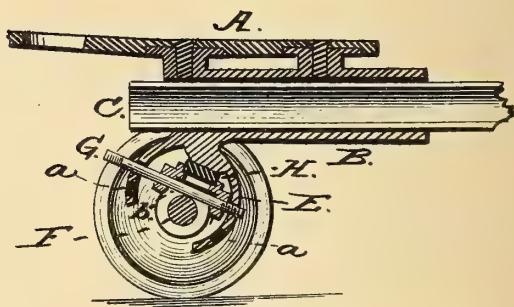


Fig. 3.



Witnesses.
Fred. G. Dieterich
Albert H. Kausel.

Inventor.
Alanson Wood
By *Charles H. Green Jr.* atty.

UNITED STATES PATENT OFFICE.

ALANSON WOOD, OF TOLEDO, ASSIGNOR OF ONE-FOURTH TO GEORGE E. WHIPPLE, OF LUCAS COUNTY, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 237,152, dated February 1, 1881.

Application filed May 17, 1880. (No model).

To all whom it may concern:

Be it known that I, ALANSON WOOD, of the city of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has relation to that class of roller-skates which have for their object to provide means for increasing and diminishing the length of the skate, so as to readily adapt the same to different-sized feet; and it consists in forming the frame of the skate out of two semi-cylindrical tubes, which are adapted to slide upon each other and projecting into cylindrical sleeves or recesses at each end of the skate, and clamped therein by suitable set-screws at proper distances apart.

It further consists of the compensating axle-journals at each end of the skate, all as will be hereinafter more fully described, and pointed out in the claims.

In the drawings, Figure 1 is a top-plan view of my invention; Fig. 2, a rear elevation, and Fig. 3 a detail sectional view of the axle-frame.

Similar letters of reference indicate like parts in the several figures.

Referring to the drawings, A A represent the toe and heel plates of the skate, which are secured to the top of the hollow cylindrical frame B at each end, a semi-cylindrical tube, C, projecting from the inner end of each of the frames B, to which they are rigidly attached, so as to form part thereof, and the free ends of which lap past each other and slide into the cylindrical sleeves or frames B, opposite each other, as shown.

To one side of the frames B are arranged set-screws D, which are adapted to be clamped upon the semi-cylindrical tubes C, so as to hold them rigidly at the desired distances.

To the front of the forward frame B, and at the rear of the rear frame B, is formed a curvilinear frame, E, which is adapted to receive the axle-frame F, as shown in Fig. 3. The frame E is provided with a series of openings, a, on each side, and the axle-frame F is provided with a central opening, b, to permit of the entrance of the square-headed bolt G, which passes through the openings a b, to secure the axle-frame F within the frame E, a block of rubber or other elastic material, H, being interposed between the axle-frame and the frame E, as shown in Fig. 3.

The construction of my invention being as described, it will be observed that in the operation of the same, by loosening the set-screws D the skate may be lengthened or shortened to suit different-sized feet, and can be held at suitable distances apart by tightening the set-screws.

It will also be observed that the bolt G can be introduced through the various openings a of the frame E and through the opening b of the axle-frame F, so as to give either a loose or tight bearing to the axle-frame.

Having thus described my invention, what I claim as new and useful is—

1. In a roller-skate, the frames B B, having semi-cylindrical tubes C attached thereto, and provided with the heel and toe plates A, and bearing-frame E, adapted to receive the axle-frame F and rubber block H, secured thereto, substantially as and for the purpose specified.

2. In a roller-skate, the combination of the axle-frame F, having central opening, b, with the frame E, having openings a, and bolt G, and provided with rubber block H, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have affixed my signature in presence of two witnesses.

ALANSON WOOD.

Witnesses:

ARION E. WILSON,
LAWRENCE S. MEGGINSON.

(No Model.)

S. WINSLOW.
Roller Skate.

No. 240,215.

Patented April 12, 1881.

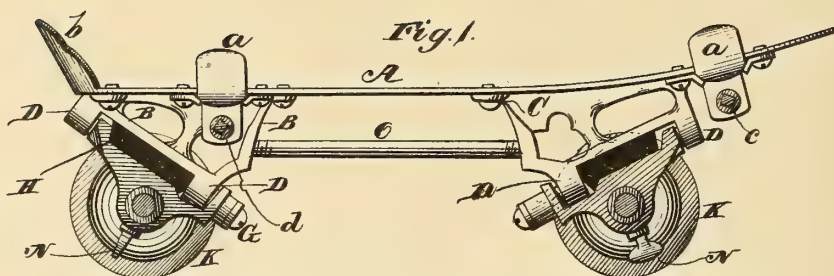


Fig. 2.

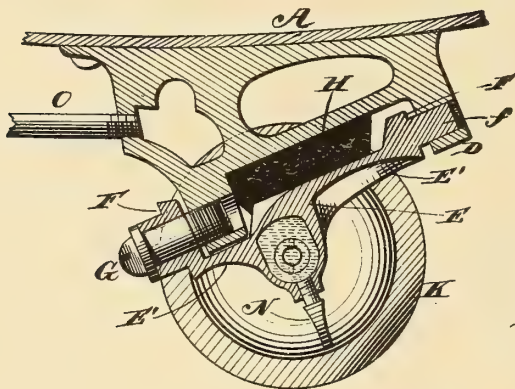


Fig. 5.

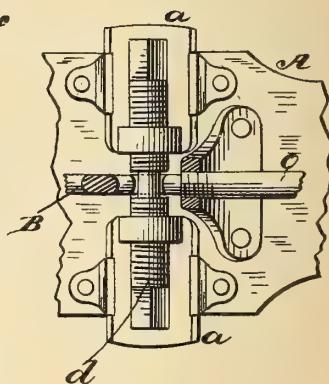


Fig. 3.

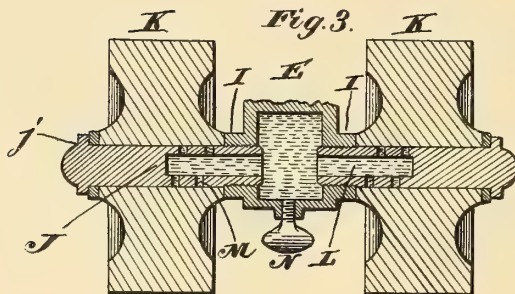
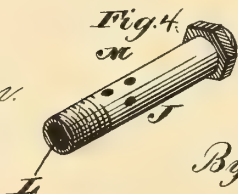


Fig. 4.



Witnesses:

Jas. E. Hutchinson.
 J. A. Rutherford.

Inventor.

Sam'l Winslow

By James L. Norris.

Atty.

UNITED STATES PATENT OFFICE.

SAMUEL WINSLOW, OF WORCESTER, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 240,215, dated April 12, 1881.

Application filed March 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL WINSLOW, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

This invention has reference to that class of roller-skates in which the foot-plate can be tipped or inclined by the motion of the foot of the wearer, so as to cause the axles of the wheels or rollers to change from a parallel position to an inclined position toward each other, and thus cause the skate to run in curved lines.

The object of the present invention is to materially improve the construction of the skate forming the subject-matter of Letters Patent No. 229,011, granted to me on the 22d day of June, 1880; but the novel devices now described can also be applied to roller-skates of every known description.

The invention consists in the provision of an oil chamber or box, which forms part of or is carried by arms loosely fitted in bearings on the foot plate or stand, so as to form a hinge or pivot connection between said foot-plate and the wheels having their axles projecting from the oil box or chamber. The axles of the wheels are connected with the oil box or chamber by a screw and socket or other form of joint, and they are made with axial bores having one or more openings leading therefrom for conveying oil or lubricating material to the bearing-surface of the axles.

In the drawings, Figure 1 is a side elevation of a roller-skate embodying my improvements. Fig. 2 is a longitudinal section taken through one of the hangers and the oil-box and roller-frame mounted thereon. Fig. 3 is a vertical section taken through a pair of rollers, their axles, and the oil-box. Fig. 4 is a detached view of one of the roller axles or spindles. Fig. 5 is a bottom view of the rear hanger and the screw for adjusting the sole-clamps journaled thereon.

The foot-plate, A, shown in the present instance is made of metal, and has the laterally-adjustable sole-clamps *a* and the heel-plate *b* used in ice or runner skates. The sole-clamps are located at the front and rear of the foot-plate, and are adjusted through the medium of

the transverse screw-shafts *c d*. These screw-shafts have right and left hand screw-threads cut thereon, and are fitted in central bearings. The screw-shaft *c* of the front pair of sole-clamps is fitted in a slotted or forked bearing projecting from the bottom of the sole-plate, and the rear screw-shaft, *d*, is supported by the hanger B of the foot-plate. This hanger, together with a similar one, C, located near the front of the foot-plate, does not differ in construction or form from corresponding devices found in my Patent No. 229,011. The hangers B C are likewise provided with the obliquely-arranged top and bottom eyes D, which receive the pintles or pivots of the roller frame or yoke.

In the present instance the roller-frame is composed of a body portion, E, which is made hollow, so as to serve as an oil chamber or reservoir, and is provided with front and rear arms, E', having upturned ends or ears F. One of these ears has the pintle or gudgeon *f* formed therewith, which enters the top eye, D, on the hanger, and the other ear is made tubular for the passage of the screw-pintle or coupling-pin G. This screw serves to connect the roller-frame to the hanger in connection with the other pintle, *f*, and it also bears against an india-rubber or elastic cushion, H, interposed between the hanger and roller-frame. The hollow or chambered roller-frame, or the body portion of said frame, serves as an oil chamber or reservoir for lubricating material, as previously stated, and each frame has screw-threaded sockets or lateral extensions I, which receive the screw-threaded ends of the roller axles or spindles J. These axles are provided with outer heads, *j*, between which and the shoulders of the extensions I the ordinary rollers or wheels K are held, so as to turn on said axles. The axles are made tubular, or provided with an axial bore, L, which has one or more openings, M, leading therefrom to the outer or bearing surface of the axle.

It will be obvious that the oil contained in the reservoir or chamber follows into the bore of the axle, and from thence passes to the bearing-surface through the openings M. In this manner the automatic lubrication of the rollers is insured, so as to cause the same to run easily and smoothly at all times.

The oil-chamber is provided with a filling-orifice closed by a suitable screw plug or cap, N.

In the skate previously patented to me the hangers are subject to longitudinal strains, which has a tendency to throw the parts out of their proper positions. I overcome this defect by connecting the hangers through the medium of a longitudinal tie-rod or brace, O. The ends of this rod are provided with screw-threads running in reverse directions, and fitted into screw-sockets in the hangers. This mode of connection is preferred; but the rod may be secured by riveting its ends. The function of the rod is to equalize the strains to which the hangers and their appendages are subject, and otherwise firmly brace the various parts.

What I claim is—

1. In a roller-skate, the combination of a roller frame or support having a central oil-

chamber, and spindles or axles provided with means for conducting oil to the bearing-surface thereof, with the foot-plate, hangers, and rollers, substantially as set forth.

2. The roller-frame having the oil chamber or reservoir and screw-threaded sockets, the hollow and apertured axles or spindles having screw-threaded inner ends and heads at their outer ends, in combination with the foot-plate, hanger, and rollers turning on the axles, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL WINSLOW.

Witnesses:

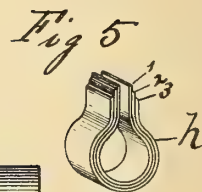
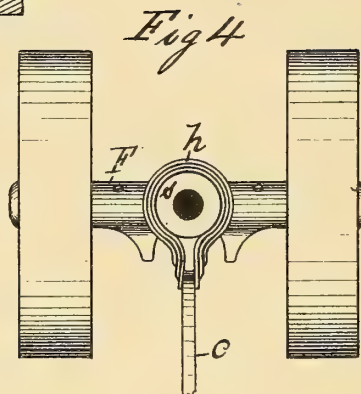
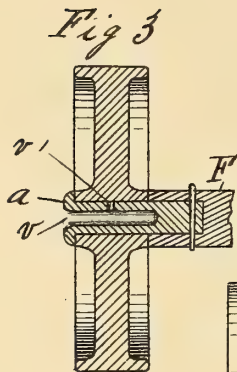
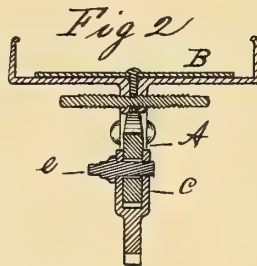
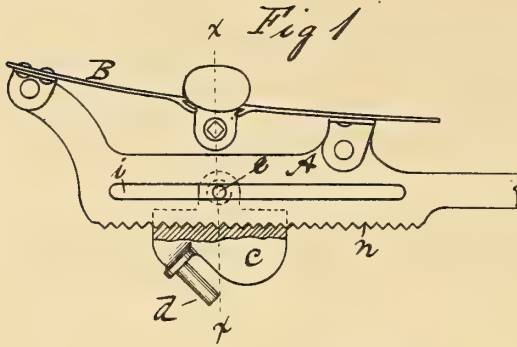
JAMES L. NORRIS,
J. A. RUTHERFORD.

(No Model.)

E. H. BARNEY.
Roller Skate.

No. 240,363.

Patented April 19, 1881.



Witnesses
J D Garfield
Wm A Chapin

Inventor
Eugene A. Barney.
By Henry A. Chapman
Atty

UNITED STATES PATENT OFFICE.

EVERETT H. BARNEY, OF SPRINGFIELD, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 240,363, dated April 19, 1881.

Application filed January 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, EVERETT H. BARNEY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

This invention relates to the details of construction of a roller-skate which provide means for moving the forward axle thereof to different positions under the foot and there properly securing it to an improved axle-skein, and an improved axle-retracting spring, the object being to enable a skater to set the axle of a roller-skate at such a point forward or back of the center of his foot as may best suit the peculiar requirements of each wearer, to provide means for conveniently and effectually oiling a skate-roller without taking off the roller, and to provide an efficient retracting-spring adapted to the peculiar service required therefrom in this construction.

The improvements herein described and shown are in the nature of improvements upon my patent of December 21, 1880, to which reference may be had.

In the drawings forming part of this specification, Figure 1 is a side elevation of the forward or sole-plate portion of a roller-skate, showing a part of its frame and my improved adjustable axle-support, partly in section, and one of its sides removed. Fig. 2 is a vertical section through the line *xx*, Fig. 1. Fig. 3 is a view in section of one end of a roller-skate axle and wheel, showing my improved axle-skein in section. Fig. 4 is an under-side plan view of a roller-skate axle and wheels, its bolt-hub, a part of the frame, and my improved retracting-spring; and Fig. 5 is a view of said retracting-spring detached from the axle-bolt hub.

In the drawings, A is the frame of the skate. *i* is a longitudinal slot in frame A. *c* is a movable axle-support. *e* is a screw passing through the two sides of support *c* and through slot *i*. *n* is the serrated lower edge of frame A. B is the foot-plate of the skate. *d* is an inclined axle-bolt. F is the axle. *a* is the axle-skein. *v* is a longitudinal cavity in the skein *a*. *v'* is a hole bored from the outside of the skein *a*

into the cavity *v*. *h* is the axle-retracting spring. *s* is the axle-bolt hub on axle F.

To provide for moving the axle-support *c* under frame A, and for firmly securing it thereunder, I make that portion of the under edge of said frame, where the support *c* is to be secured, straight, as shown, and cut a longitudinal slot, *i*, in said frame on a line with its edge, and said edge may be provided with a series of serrations, *n*, to provide means for securing said support against any possibility of slipping on the frame, although said support can be fastened very securely without them. When the edge of the frame is so serrated, the bottom of the groove between the two sides of the support *c* is likewise serrated to match the edge of the frame, and thus interlock when the support is fastened to the frame.

I construct the axle-support *c* separate from frame A, and attach to it the usual inclined axle-bolt, *d*. Said support *c* is made with a groove in its upper edge, adapted to receive between its two sides the lower edge of frame A, as shown, and is provided with a screw, *e*, entering freely through one of its sides and the slot *i* in frame A, and screwing into the opposite side, and when the support *c* is fastened to said frame A, as in Fig. 2, the edge of the latter is so tightly clamped between the sides of the support as to prevent its moving under any ordinary strain.

In the drawings only that part of the frame under the sole-plate of the skate is shown as adapted to receive the movable axle-support *c*; but, if desired, the frame under the heel-plate may be made likewise to receive a like support for the rear axle, and thus either or both axles be secured adjustably under the frame A.

In Fig. 3 is shown my improved axle-skein *a*. This skein is pinned into the end of axle F, as in my said patent; but the skein is pierced from its outer end to form the cavity *v*, and a hole, *v'*, is pierced in it from the outside thereof into the said cavity *v*, said hole *v'* opening about opposite the center of the wheel-hub, as shown. The axle-skein, made as above described, provides very convenient means for conveying oil directly to the inner surface of the wheel, which runs against the skein, by introducing oil into cavity *v*, from whence it

flows, through the hole v' , into the wheel-hub, and properly lubricates it without having to remove the wheel for that purpose; and when the wheel is secured to the axle by a solid-headed skein, as here shown, this is particularly desirable, as oil can only with difficulty be introduced between the skein-head and the wheel-hub, so as to have it properly reach the interior of the hub.

10 In my said patent the spring h , whose use is there described, is shown as made from a single strip of metal. This is efficient on skates worn by light skaters; but under other circumstances it is desirable to have a spring of much
15 greater resistance, strength, and flexibility than can be made from a single strip; therefore I make the spring h , herein shown, of two or more leaves, 1 2 3, and form it to partially encircle the axle-bolt hub s , and have its ends
20 bear against the sides of support c , or of the frame A , as they do in my said patent, and for the purpose therein set forth.

It is obvious that other means than precisely those herein shown for fastening the support
25 c to frame A may be used—as, for instance, a series of holes may be pierced through said frame, through which screw e may pass, instead of through a slot, and the groove in the upper edge of said support may be dispensed
30 with, and the support be bolted at different points along on the side of said frame; but neither of said modified modes of fastening

would essentially change this feature of my invention, which consists, essentially, in so constructing the forward axle-support and
35 frame of a roller-skate that said forward axle may be moved to and secured at different points upon said frame under the sole-plate of the skate.

What I claim as my invention is— 40

1. In combination, the frame of a roller-skate constructed without a forward axle-support, the movable axle-support c , having upon it the inclined axle-bolt d , and appliances, substantially
45 as described, for securing said axle-support to said frame at different points under the sole-plate of the skate, substantially as and for the purpose set forth.

2. The combination, with the axle F and the wheel of a roller-skate, of the skein a , secured
50 to said axle, and having pierced therein the cavity v and the hole v' , substantially as and for the purpose set forth.

3. In combination with the axle F , having thereon the axle-bolt hub s , and with the frame
55 of a roller-skate, the spring h , consisting of two or more leaves, 1 2 3, adapted to partially encircle said hub, and having arms overlapping the frame, substantially as and for the purpose set forth.

EVERETT H. BARNEY.

Witnesses:

WM. H. CHAPIN,
J. D. GARFIELD.

(No Model.)

C. M. RAYMOND.
Roller Skate.

No. 240,545.

Patented April 26, 1881.

Fig. 1.

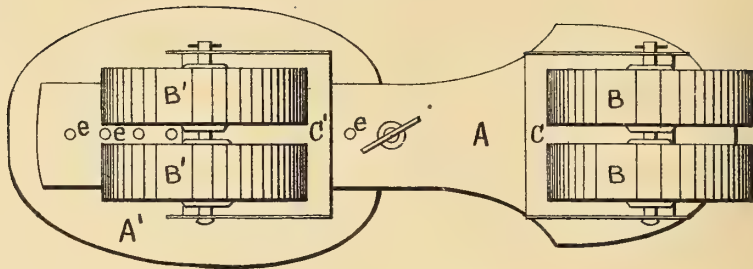


Fig. 2.

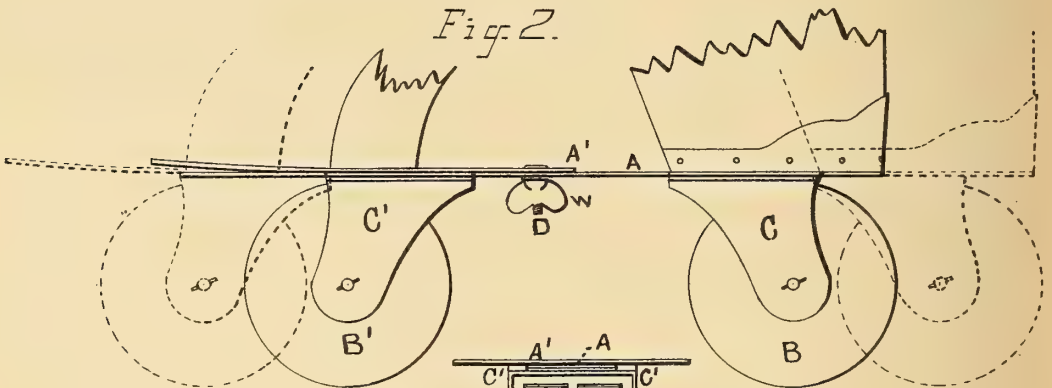
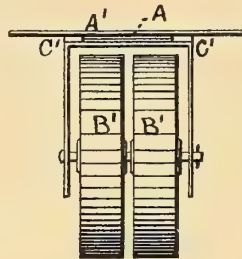


Fig. 3.



WITNESSES:

Irving Dickinson

John F. Acker

INVENTOR,

C. M. Raymond

By David A. Burr

Atty.

UNITED STATES PATENT OFFICE.

CADWALLADER M. RAYMOND, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 240,545, dated April 26, 1881.

Application filed January 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, CADWALLADER M. RAYMOND, a resident of Boston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to a roller-skate so constructed as to admit of adjustment in its length to fit either a long or a short foot.

It consists in combining the front and rear rollers of a roller-skate with independent heel and toe plates flattened and extended to lie upon and overlap each other and beyond the rollers, and which are tied together and firmly supported by means of a transverse strap-plate secured to the one to extend over the other, and are fastened together, when adjusted, by means of a pin projecting from the upper plate to spring into apertures in the under plate.

The object of my invention is to produce with light foot-plates a firm strong joint between the adjustable plates, and also combined bearing for the two over the points of bearing upon the rollers, and thereby to furnish an adjustable or extendible skate equally as strong as the ordinary skate at a very slight difference in cost.

In the accompanying drawings, Figure 1 is a bottom view of my improved extendible roller-skate; Fig. 2, a side elevation thereof, an extension of the skate being illustrated by dotted lines; and Fig. 3 is a front view of the skate.

A A' are, respectively, the heel and toe plates of the skate. These are made flat, of thin metal, and of such length as to overlap upon each other over the front or rear wheels, even when the skate is extended to its full length, as illustrated by dotted lines in Fig. 2.

B B' are rollers arranged to rotate in the customary manner between journal plates or pedestals C C', secured to and projecting from said plates A A', as shown in Fig. 2.

The durability of the rollers may be increased by metal tires, or they may be covered with rubber or leather to render them noiseless.

The front rollers, B', are attached to the front toe-plate, A', and the hind rollers, B, to the rear or heel plate, A.

The journal-plates for the front rollers (see Figs. 2 and 3) are united to a wide transverse connecting-piece, C', Fig. 1, which is secured to the plate A' upon narrow interposed strips laid upon each side of the end of the overlapping heel-plate A. (See Fig. 3.) An opening is thus left between the connecting-piece C' and the plate A', through which the front end of the heel-plate A passes, the connecting-piece C' serving as a broad strap to confine the two plates A A' together, and which will prevent any lateral movement thereof one upon the other, and keep them in close juxtaposition, although permitting their free longitudinal movement.

When the skate is reduced to its smallest size the front end of the heel-plate A extends under the strap-piece C' to the front end of the toe-plate A', and when the skate is extended to its utmost length the front end of the heel-plate will still bear against the toe-plate under the strap C', and extend over the front rollers, B'. A firm bearing and support is thus obtained between the two plates, whatever may be the length of the skate. The plates thus fitted one upon the other are secured, when adjusted, by means of a pin, D, projecting from the under side of the upper plate, A', and which springs into one of a series of apertures, e e, pierced in the lower plate.

The elasticity of the two plates, held together by the wide strap C', allows them to spring apart sufficiently to permit a change of the pin from one hole to another in adjusting the length of the skate. When so adjusted the pin may be prevented from springing out by means of a thumb-nut, W, screwing upon the end thereof.

Instead of causing the plates to overlap at the front end over the front roller, they may be made to overlap over the rear rollers with the same result.

I do not claim, broadly, an extendible skate constructed with independent overlapping heel and toe plates.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, in an adjustable roller-skate, of independent heel and toe plates, made to overlap constantly over one set of the skate-

rollers, with one or more transverse support-
ing bands or straps secured to the one plate
over said rollers, to pass over and tie down the
other, and to prevent other than a longitudi-
5 nal intermovement of the plates, substantially
as and for the purpose herein set forth.

In testimony whereof I have signed my name

to this specification in the presence of two sub-
scribing witnesses.

CADWALLADER M. RAYMOND.

Witnesses:

J. F. ACKER, Jr.,

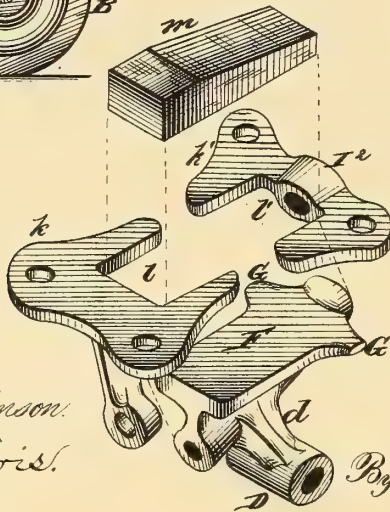
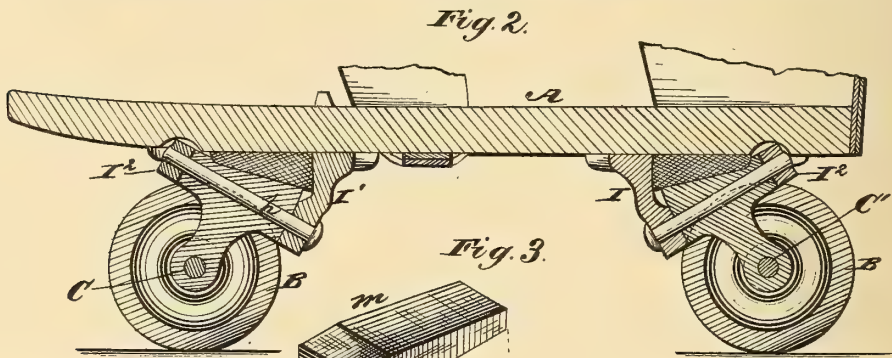
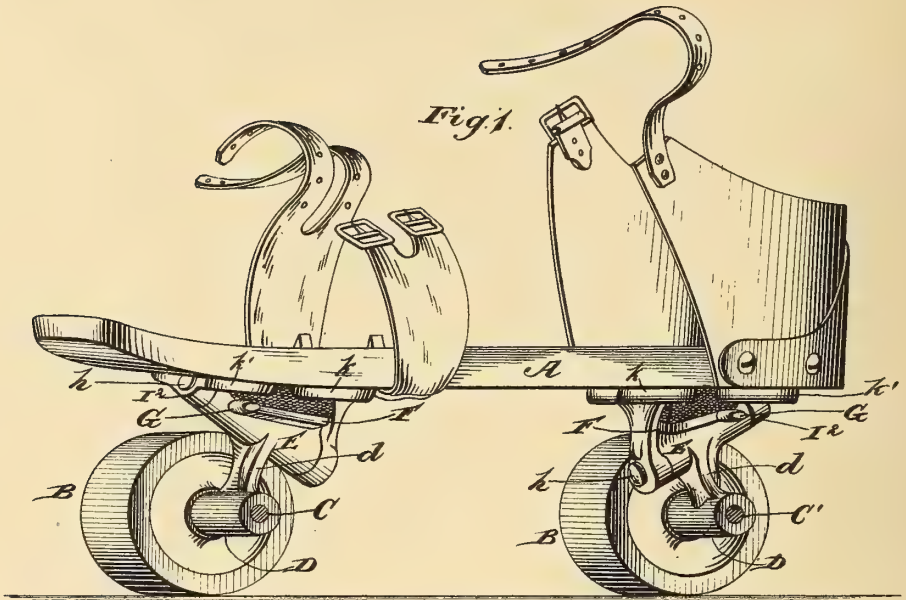
IRVING DICKINSON.

(No Model.)

S. WINSLOW.
Roller Skate.

No. 240,800.

Patented April 26, 1881.



Witnesses.

Jas. E. Hutchinson.
Albert H. Norris.

Inventor.

Samuel Winslow,

By James L. Norris.
Atty.

It is hereby certified that in Letters Patent No. 240,800, granted April 26, 1881, to Samuel Winslow for an improvement in "Roller Skates," the word "effort," in line 78 on page 1 of the printed specification attached to and forming a part of said Letters Patent, was erroneously printed "effect;" that the proper corrections have been made in the files and records pertaining to the case in the Patent Office, and are hereby made in said Letters Patent.

Signed, countersigned, and sealed this 21st day of June, A. D. 1881.

[SEAL.]

A. BELL,
Acting Secretary of the Interior.

Countersigned:

E. M. MARBLE,
Commissioner of Patents.

UNITED STATES PATENT OFFICE.

SAMUEL WINSLOW, OF WORCESTER, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 240,800, dated April 26, 1881.

Application filed March 30, 1881. (No model.)

To all whom it may concern :

Be it known that I, SAMUEL WINSLOW, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to that class of roller-skates in which the foot-piece has a sidewise-rocking motion, and is provided with two pairs of rollers, front and rear. Its objects are to limit the rocking motion of the foot-piece, to provide for the ready removal and replacement of the rollers, and secure a strong and steady bearing for the rotary roller-axes.

In the accompanying drawings, Figure 1 is a perspective view of a roller-skate constructed according to my invention, and having one roller of each pair removed. Fig. 2 is a longitudinal vertical section through the center line of the skate. Fig. 3 is a view of the hangers, swiveling roller-standards, and elastic bearing-block detached.

The letter A denotes the foot-piece, provided with heel and toe straps, as usual. The rollers B are mounted loosely on axles C C', arranged transversely under the heel and toe portions of the foot-piece, and said axles turn loosely in elongated tubular bearings D, from which rise standards *d*, carrying at their tops inclined sleeves E, arranged at right angles to the said tubular bearings. A recess should be formed at or about the center of the tubular bearings to form a chamber for holding a lubricating medium. These sleeves E have attached to their tops flat plates F, the upper surfaces of which are also inclined longitudinally with respect to the foot-piece, but not quite so much so as the sleeves E. The plates F are, in effect, flat upper surfaces for the sleeves. From the opposite edges of the plates F, near their outer ends, respectively, project lugs G G, for a purpose to be hereinafter explained. The sleeves E are swiveled upon inclined pins *h*, the inner and lower ends of which are supported in bearings at the lower ends of long hangers I I' projecting downward from suitable fastening-plates, *k*, attached to the bottom of the foot-piece, and the upper and outer ends of said pins are secured in ears I² projecting from plates *k'*, also attached to the bot-

tom of the foot-piece. The fastening-plates *k* and *k'* at each end of the foot-piece are formed with recesses *l l'*, which receive the opposite ends of an elastic block, *m*, of india-rubber, and hold said block in position against the bottom of the foot-piece directly above the plate F, said block being somewhat of a wedge shape, in order that its under surface may snugly fit upon the surface of the plate.

The yielding of the roller-blocks permits the pins *h* to turn in the sleeve E, and thus a sidewise-rocking movement is obtained for the foot-piece when extra pressure is exerted upon either side, while at the same time said foot-piece is provided with an elastic support tending to hold it erect, but allowing it to yield to accommodate the movements of the skater's foot.

To avoid danger of the foot-piece rocking too far to either side, and twisting or unnecessarily straining the ankle, the lugs G G are arranged to strike the plates *k'* and limit the distance to which the foot-piece may turn.

The elongated tubular bearings D give the skate a very steady movement and afford a leverage which enables the skater to turn the foot-piece with but very little effect, so that curves may be turned with great ease.

The axles are held in their bearings and the rollers upon the axles by ordinary spring-linchpins, and as these parts can all be taken apart by simply removing the linchpins, it will be seen that a worn out or broken roller may be removed and replaced by a new one without trouble.

I am aware that the foot-piece of a roller-skate has been arranged to have an elastic rocking motion, and have myself shown in a prior patent a rubber block arranged between the flat face of a hanger and a swiveling roller-carrier, and I lay no claim here to such inventions.

What I claim is—

1. In a roller-skate, a swiveling roller-carrier provided with laterally-projecting lugs arranged to strike suitable stops upon the bottom of the foot-piece and limit the rocking motion of said foot-piece, substantially as described.

2. In a roller-skate, the suitably-supported swiveling sleeve E, having a flat upper surface, and provided with lugs G G, arranged to

strike suitable stops on the bottom of the foot-piece, in combination with the rubber block arranged between said flat upper surface and the bottom of the foot-piece, substantially as described, and for the purpose set forth.

5 3. In a double-roller skate, the swiveling or vibrating standard provided at its lower end with the elongated tubular bearing, in combination with the removable loose axle arranged
10 in said bearing, and the loose wheels mounted upon the ends of said axle, substantially as described.

4. In a roller-skate, the separate plates *k k'*, carrying the swivel-pin supports, and provided with the recesses to receive the ends of the 15 rubber blocks, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL WINSLOW.

Witnesses:

DAVID MANNING, Jr.,
JOHN B. RATIGAN.

(No Model.)

E. J. F. COLEMAN.
Roller Skate.

No. 240,812.

Patented May 3, 1881.

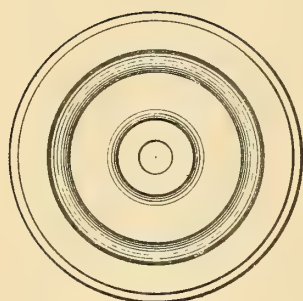


Fig. 1.

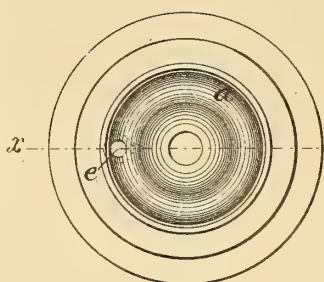


Fig. 2.

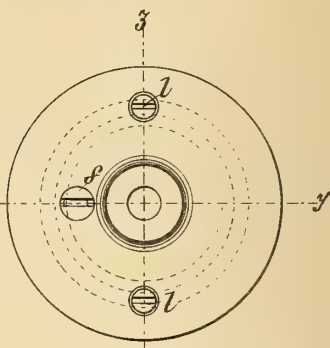


Fig. 7.

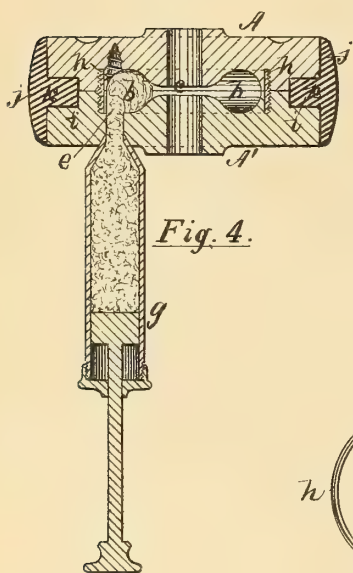


Fig. 4.

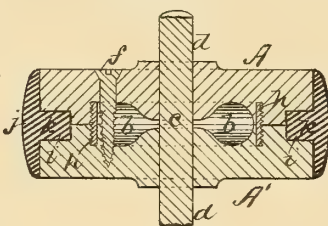


Fig. 3.

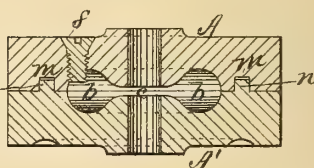


Fig. 8.

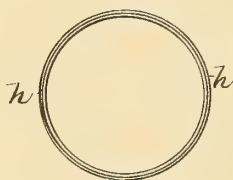


Fig. 5.



Fig. 6.

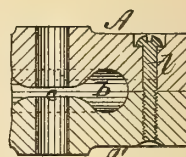


Fig. 9.

Witnesses.

E. J. Dick
Chas. C. Lane.

Inventor.

Edward J. F. Coleman,
by W. Bailey
his attorney

UNITED STATES PATENT OFFICE.

EDWARD J. F. COLEMAN, OF PROVIDENCE, RHODE ISLAND.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 240,812, dated May 3, 1881.

Application filed March 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. F. COLEMAN, of Providence, Rhode Island, have invented certain new and useful Improvements in Rollers for Skates and other Purposes, of which the following is a specification.

My invention is directed primarily to skate-rollers. It is, however, applicable to rollers for other purposes.

I have devised a sectional roller composed of disk-like sections, which are put together side by side and bound tightly together by means of suitable fastening devices. By thus forming the roller I am enabled economically, and with ease and expedition, to provide the roller with a lubricating-chamber, which is contained within the body of the roller, and communicates through passages with the interior face of the hub which runs upon the axle on which the roller is mounted. I am also enabled, by reason of said mode of construction, to provide the roller, if need be, with a tire of rubber or other equivalent material, which can be held tightly and securely in place by forming it with an inwardly-projecting annular flange designed to enter between and to be clamped by the roller-sections.

The nature of my improvement and the manner in which same is or may be carried into effect will be understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a roll embodying my invention. Fig. 2 is a side elevation of the inner face of one of the sections of the roller. Fig. 3 is a section on line *x x*, Fig. 2. Fig. 4 is a like section, representing the manner of charging or filling the lubricating-chamber. Fig. 5 is a plan, and Fig. 6 is an elevation, of the metallic screw-threaded ring used to unite the roller-sections. Fig. 7 is an elevation of a modified kind of roller. Fig. 8 is a section on line *y y*, Fig. 7. Fig. 9 is a section on line *z z*, Fig. 7.

It will be understood that the body of the roller can be made of any proper material. The roller shown in the drawings is a skate-roller, and is intended to be made of box-wood. It is composed of two disk-like sections, *A A'*. The contiguous surfaces of these sections fit one another, so that when the two are put together and fastened together they will constitute, in effect, a solid roller. By thus construct-

ing the roller I am enabled to provide it with an internal lubricating-chamber, or with a firmly-secured tire, of rubber or other proper material, or with both of these things. The roller shown in Figs. 1 to 4 embodies both features.

To make the lubricating-chamber I recess the contiguous faces of the disk-sections—as shown for one section in Fig. 2—at *a* the recess being of annular shape, so that when the disk-sections are put together they will form an annular chamber, *b*. Toward the center of the disks the recesses grow shallow, so that they form in the roller an annular narrow slot or passage, *c*, extending from the lubricating-chamber *b* to the interior surface of the hub, which fits the axle *d*, on which the roller is mounted. Through this annular passage the grease or other lubricant with which the chamber should be filled finds its way to the axle, so as to lubricate the necessary surfaces. Access is had to the chamber through a hole, *e*, in the side of the roller, which is closed by a screw, *f*. The chamber can be readily filled by means of a syringe, *g*, (shown in Fig. 4,) which forces the lubricant with which it is charged into the chamber through the screw-hole *e*, after which the hole is closed by the screw *f*.

Various means may be employed to fasten the roller-sections tightly together. The means for this purpose shown in Figs. 3 and 4 consists of an externally screw-threaded metallic ferrule, *h*, which is firmly seated in one of the sections—say *A*—concentrically with the axis of the roller, with a portion—say one-half—of its length projecting from the inner face of the same. In the contiguous face of the other section, *A'*, is cut an annular kerf or narrow slit of proper depth and diameter, so that when the two sections are put together it can be entered by the projecting portion of the screw-ferrule *h*. In this way the section *A'* may be screwed upon the ferrule *h*, so as to be drawn closely against the section *A*, making a tight joint therewith, which may be sealed, if need be, by glue or other suitable adhesive substance applied to the contiguous faces of the sections. Under this arrangement it will be noted that it will be practically impossible for the lubricant to ooze through the joint to the periphery of the roller. The screw *f*, when inserted in place, serves not only as a plug or

stopper, but also (inasmuch as it passes through one section into the other) acts as a check or binding nut, to prevent the unscrewing of one section from the other.

5 In case a tire is to be applied to the roller, I cut in the adjoining faces of the sections annular recesses *i*, which extend a suitable depth inwardly from the periphery; and I provide a
10 tire, *j*, of rubber, rawhide, or other proper material, provided centrally of its inner face with an annular inwardly-projecting flange, *k*, of such thickness that when in the space made by recesses *i* it will be firmly clamped between the two sections when they are drawn
15 together. The tire is first sprung onto one section, with its flange extending into the recess *i* of that section, before the other section is screwed up into place. The tire, if desired, may be further secured in place by glue or by
20 screws passing laterally through the roller-sections and the intermediate flange, *k*.

I have shown the roller provided with both tire and lubricating-chamber; but, if desired, the tire may be used without the lubricating-
25 chamber, or vice versa.

I prefer to use the screw-ferrule as the means of binding the sections together; but other means may be employed, if desired. For instance, in Figs. 7 to 9 the roller-sections are held together by screws *l*. In this arrangement, in order to center the sections and to prevent strain due to any tendency to slip motion between the sections from coming on the screws *l*, I form on the inner face of one section an annular mortise or groove, *m*, and on
30 the adjacent face of the other section an annular tenon or tongue, *n*, which enters and fits snugly in the mortise when the sections are put together.

It is essential to the solidity and durability 40 of the roller that there should be a male and female interlocking joint between the sections to prevent longitudinal slip motion, as well as means for clamping the two sections together.

Having described my invention, what I 45 claim, and desire to secure by Letters Patent, is as follows:

1. A roller composed of disk-sections which are provided on contiguous faces with interlocking portions to prevent slip motion, and are clamped tightly together by fastening devices, substantially as hereinbefore set forth. 50

2. The roller disk-sections, in combination with the annular screw-ferrule, substantially as hereinbefore set forth. 55

3. The roller-sections recessed on their contiguous faces, substantially as described, so that when put together said recessed parts shall form a lubricant-chamber and passage leading therefrom to the interior of the roller-hub, in combination with clamping or fastening devices which bind said sections together, substantially as set forth. 60

4. In combination with the roller-sections and the clamp or fastener for uniting the same, 65 the tire, of **T** form in cross-section, having its flange contained in a peripheral recess in the roller and clamped between said sections, substantially as hereinbefore set forth.

In testimony whereof I have hereunto set 70 my hand this 25th day of March, A. D. 1881.

EDWARD J. F. COLEMAN.

Witnesses:

E. A. DICK,
N. C. LANE.

(Model.)

2 Sheets—Sheet 1.

W. F. CORNELIUS.
Roller Skate.

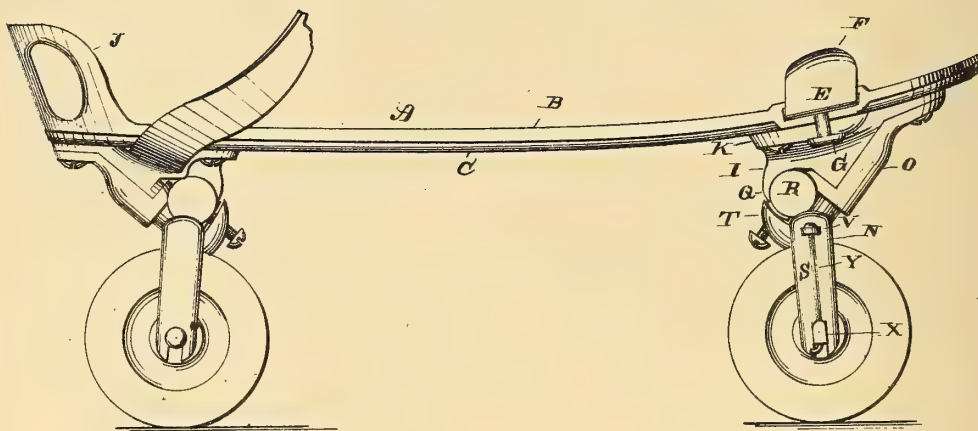
No. 240,970.

Patented May 3, 1881.

Fig. 1.



Fig. 2.



Attest :

Thos. L. Landon.
Wm. C. Anderson

Inventor:
W. F. Cornelius.
By H. S. Abbott.
attorney.

W. F. CORNELIUS.
Roller Skate.

No. 240,970.

Patented May 3, 1881.

Fig. 3.

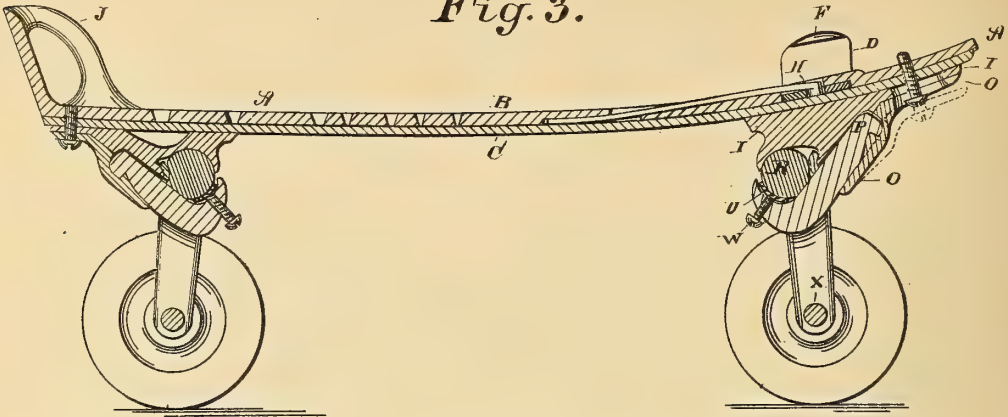


Fig. 4.

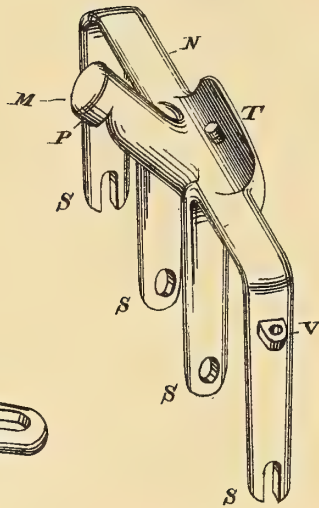


Fig. 5.

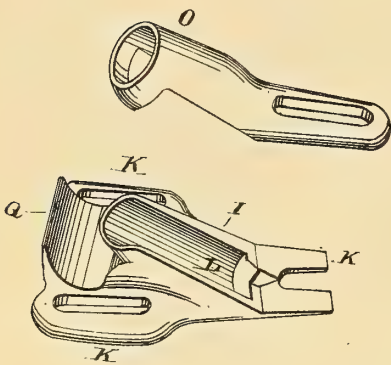
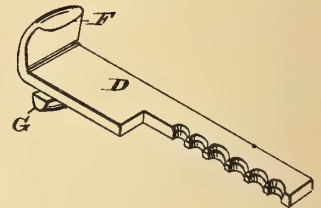


Fig. 6.



Attest:

Herrn. Lauten.
W. F. Cornelius.

Inventor:

W. F. Cornelius.
By H. S. Abbot.
attorney.

UNITED STATES PATENT OFFICE.

WILBER F. CORNELIUS, OF MUNCIE, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 240,970, dated May 3, 1881.

Application filed March 14, 1881. (Model.)

To all whom it may concern:

Be it known that I, WILBER F. CORNELIUS, a citizen of the United States, residing at Muncie, in the county of Delaware and State of Indiana, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a top view. Fig. 2 is a side view. Fig. 3 is a longitudinal vertical section. Fig. 4 is a perspective view of the hanger. Fig. 5 is a perspective view of the two parts composing the front socket, in which the hanger is seated. Fig. 6 is a perspective view of one of the sections of the toe-clamp.

A is a compound stock or foot-rest, composed of an upper plate, B, of malleable iron or other suitable material for receiving the required form, and a lower or bottom plate, C, of elastic material, preferably of steel, (although some of the elastic hard woods may be used,) for giving the required strength and elasticity with the minimum weight of material.

Near the front end of the plate B a recess is made across the plate, for the reception of the two toe-clamps D E for holding the front end of the skate to the shoe. These toe-clamps are angle-pieces of metal, as shown in Fig. 6 of the drawings forming a part of this specification, the outer end being provided with a flange extending upward and curved inward, forming a lip, F, for creasing into and holding onto the sole of the shoe. Near the outer end, beneath the flange of each toe-clamp, is a button, G, for the attachment of straps, to be passed over the toe of the shoe when desired. The clamps D E have about one-half of their breadth cut away from the inner side for about two-thirds of their length from the inner end, and have their inner edges notched, so that when they are in position, as shown in Fig. 1 of the drawings, they will lap, and the notches will register and receive the pin H, thereby effecting the necessary adjustment. The pin H is an extension of an elastic bar, the end of which extends

back under the plate B, and when the skate is in use is secured in its place by the weight of the foot.

To the back end of the plate B a heel-guard, J, is placed, having an inclination sufficient to force the shoe forward between the toe-clamps upon the pressure of the heel upon the upper inner side.

In order to secure the requisite strength and compactness of form with the minimum of weight of material and adaptability for the ready removal for repair or adjustment of the rubber cushion, (where the greatest amount of wear in a skate takes place,) I have devised and adopted a truck of peculiar construction. This truck is composed of a plate, cushion, hanger, and thimble, and the necessary screws for holding the truck to the foot-rest, so constructed and arranged that by loosening the front screw the thimble may be raised, as shown in dotted lines of Fig. 3 of the drawings, and the post removed from its socket and the rubber readjusted or replaced.

To the bottom plate, C, a combined socket and spring cushion-plate, I, is secured in a suitable position near the toe. This cushion-plate is of peculiar construction, being made longitudinally adjustable for a suitable distance by means of slotted ears K, one on each side and one at the front end, through which screws pass into the plates B and C, holding the cushion-plate securely in place.

The socket L, in which the spindle M of the hanger N is seated, is set at an angle of about forty-five degrees to the plane of the plate C, and composed of part of the plate I, and extends above the surface, forming a flange for receiving the thimble O, which closes in the post and extends to the front slot, and is held down in place by the screw that holds the plate. This thimble has a lug on its under side for engaging with the lug P of the post for the purpose of holding the post in place.

Just back of the socket L the plate I has a recess, Q, for the reception of the spring cushion or bolster R, which may be of any suitable material or form, but preferably of rubber, and a cylinder whose length shall be about three times its diameter.

The post M is set on the cross-bar of the hanger N at an angle of about forty-five de-

grees from the perpendicular, so that the arms S S S S of the hanger N will project almost straight downward. This manner of seating the spindle of the hanger gives the desired curve movement upon pressure of the foot to either side. Opposite the post the hanger has a flange, T, in which is fitted a curved plate, M, and through which a set-screw, W, passes, for adjusting the pressure upon the spring R.

10 The four arms of the hanger N bear upon the axle X, upon which the rollers revolve. In casting the hanger the bearings for the axle in the two outer arms are cast open to the end, with straight sides, so that only the two inner arms have to be drilled to receive the axle. One end of the axle is cut square to fit one of the open bearings, so as to prevent the turning of the axle; and this arm of the hanger is provided with a lug, V, through which the linchpin Y passes, to prevent the endwise movement of the axle.

For the purpose of facilitating description, I have confined my description and letters of reference thus far to the front truck. The one under the heel differs from the one under the toe in no essential feature except this, that the lugs K at the toe have slots for adjustment, while no provision is made for adjustment at the heel, it not being necessary.

30 Having thus described my invention; I claim—

1. A compound stock or foot-rest for roller-skates, composed of a plate, B, of malleable

iron, and a plate, C, of steel, united substantially as shown and described.

2. An adjustable toe-clamp composed of clamps D E, lips F F, and spring-pin H, substantially as shown and described.

3. A cushion-seat for a hanger, composed of plate I, provided with a recess, Q, and the hanger N, provided with a flange, T, plate U, and adjusting-screw W, substantially as shown and described.

4. A socket for the spindle of a roller-skate, consisting of a plate, I, and thimble O, substantially as shown and described.

5. A hanger for a roller-skate, provided with a spindle having a lug, P, and a flange, T, substantially as shown and described.

6. In a roller-skate, the combination of a hanger, N, having arms S S S S, and an axle, X, the outer arms of the hanger being open, with straight sides to fit the straight sides of the axle and prevent its rotation, substantially as shown and described.

7. In a roller-skate, the combination of a hanger provided with a lug, V, with an axle, X, and linchpin Y, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

WILBER F. CORNELIUS.

Witnesses:

JOSEPH FORREST,
JOS. R. EDSON.

(No Model.)

W. AKIN.
Roller Skate.

No. 241,270.

Patented May 10, 1881.

Fig. 1.

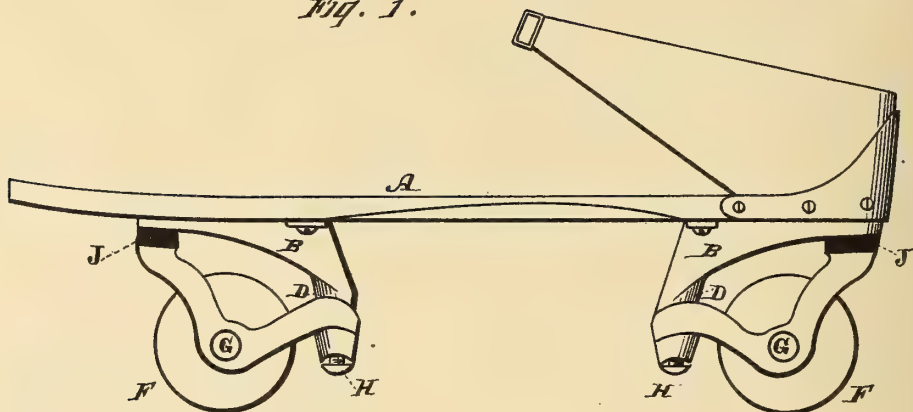


Fig. 2.

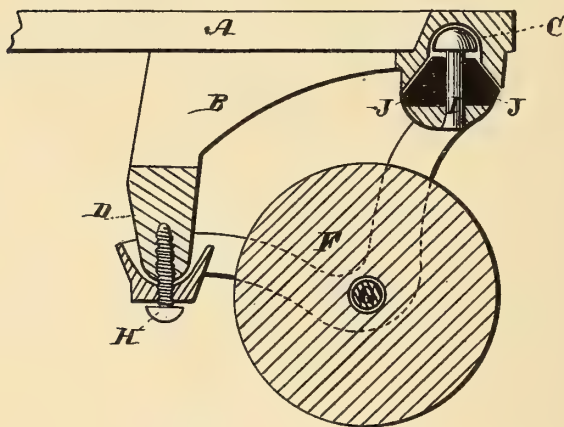
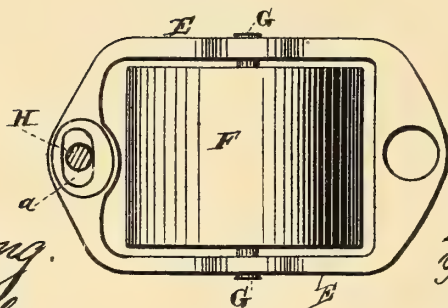


Fig. 3.



Witnesses,
Geo. H. Strong.
Frank A. Brooks

Inventor
William Akin
By
Dewey & Co.
Attys

UNITED STATES PATENT OFFICE.

WILLIAM AKIN, OF SAN FRANCISCO, CALIFORNIA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 241,270, dated May 10, 1881.

Application filed February 16, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM AKIN, of the city and county of San Francisco, State of California, have invented an Improved Roller-Skate; and I hereby declare the following to

be a full, clear, and exact description thereof. My invention relates to certain improvements in roller-skates of that class in which the roller-frames are supported upon axes which stand at an angle to a horizontal plane, so that when the foot-stand is turned to one side the rollers upon that side will be cramped or drawn nearer together, and the skate will thus be caused to run in a curve.

My invention consists, first, in such a construction of a roller-frame that a single roller may be used at each end of the skate and entirely surrounded or inclosed by its frame; and, secondly, in the formation of ball-and-socket joints, upon which the roller-frame turns to give the angle by which the skate is caused to run in a curve. The socket next the foot-stand is deeply concaved, so that the ball stands as high as possible, which is of great advantage, as it gives the roller a greater throw to each side and greater facility in turning. The rubber or other elastic returning-spring is fitted upon the shank of this ball-joint and sets in the concave below the head or ball. It is regulated, so as to give greater or less stiffness of action, by means of a screw at the opposite end of the roller-frame, and by which it is compressed or slackened.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of my skate. Fig. 2 is a section taken through the ball-joint. Fig. 3 is a view of the roller and its frame separated from the standard, to which it is to be secured.

A is a skate-block or foot-stand of any ordinary or suitable construction, and B B are standards or hangers, which are secured to the foot-stand at each end. The front and rear ends, respectively, of these hangers are deeply recessed, being projected up into the block or foot-stand, so that a socket, C, is formed close to the upper surface of the foot-stand to receive the balls which form the front and rear supports, about which the roller-frames turn. The opposite ends of the hangers which are nearest together project downward, and have

their lower ends rounded or formed into heads D, which serve as balls or supports, upon which the roller-frames turn at that point. The roller-frame E has sides separated sufficiently to admit the roller F between them, and these sides are brought together before and behind the roller, so as to form a continuous frame, within which the roller is held by a pin or axle, G, which passes through the sides, where they form an apex. This construction produces a strong support for each end of the roller, and one which is not easily broken by concussion. A socket is formed in the frame to bear upon the rounded head D of the hanger, and a transverse slot, a, is made through the bottom of this socket to admit a screw, H, which passes through and into the head D, into which it screws. The head of the screw is large enough to hold the frame in place, while the slot allows a free motion from side to side about the shank of the screw, so that the socket turns freely upon the ball at its end of the hanger. A stem or shank, I, projects upward from the opposite end of the roller-frame, so as to enter the socket C, and it has a rounded head, which turns in this socket. A rubber block, J, or other elastic spring surrounds the shank I, and the lower part of the socket C is enlarged or made flaring, so that the spring will set into the space thus formed. The adjustment of the spring to give a greater or less tension is effected by turning the screw H at the opposite end of the hanger.

By this construction I form ball-and-socket joints for the roller-frame to turn about; and, by placing the socket C deep or near the upper surface of the foot-block, I secure a greater throw of the roller from side to side in turning. The rollers F are made broad, and are each supported in the frame E, which completely encircles it, and it is carried down to an angle between the points on which it oscillates. The axle of the wheel passes through these angles, and the whole frame is thus greatly strengthened.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the hanger B, secured to the foot-stand A, and having the ball or head D at the inner end and the socket C in its

upper and outer end, in combination with the roller-frame E, having corresponding socket and head, and the holding-screw H, as herein described.

5 2. The frame E, having a central opening for inclosing the single roller, and having the sides forming an apex to receive the ends of the roller-axle, while the ends of the frame have the ball-and-socket joints in line with the center of the roller-face, so that it serves as a base, about which the foot-stand turns, substantially as herein described.

10 3. The hanger B, with the socket C at one

end made flaring to receive the ball or head from the roller-frame and the elastic returning-spring J, and having the head D fitting the socket at the opposite end of the roller-frame, in combination with the screw H, fitted to the head D, substantially as herein described.

In witness whereof I have hereunto set my hand.

WILLIAM AKIN.

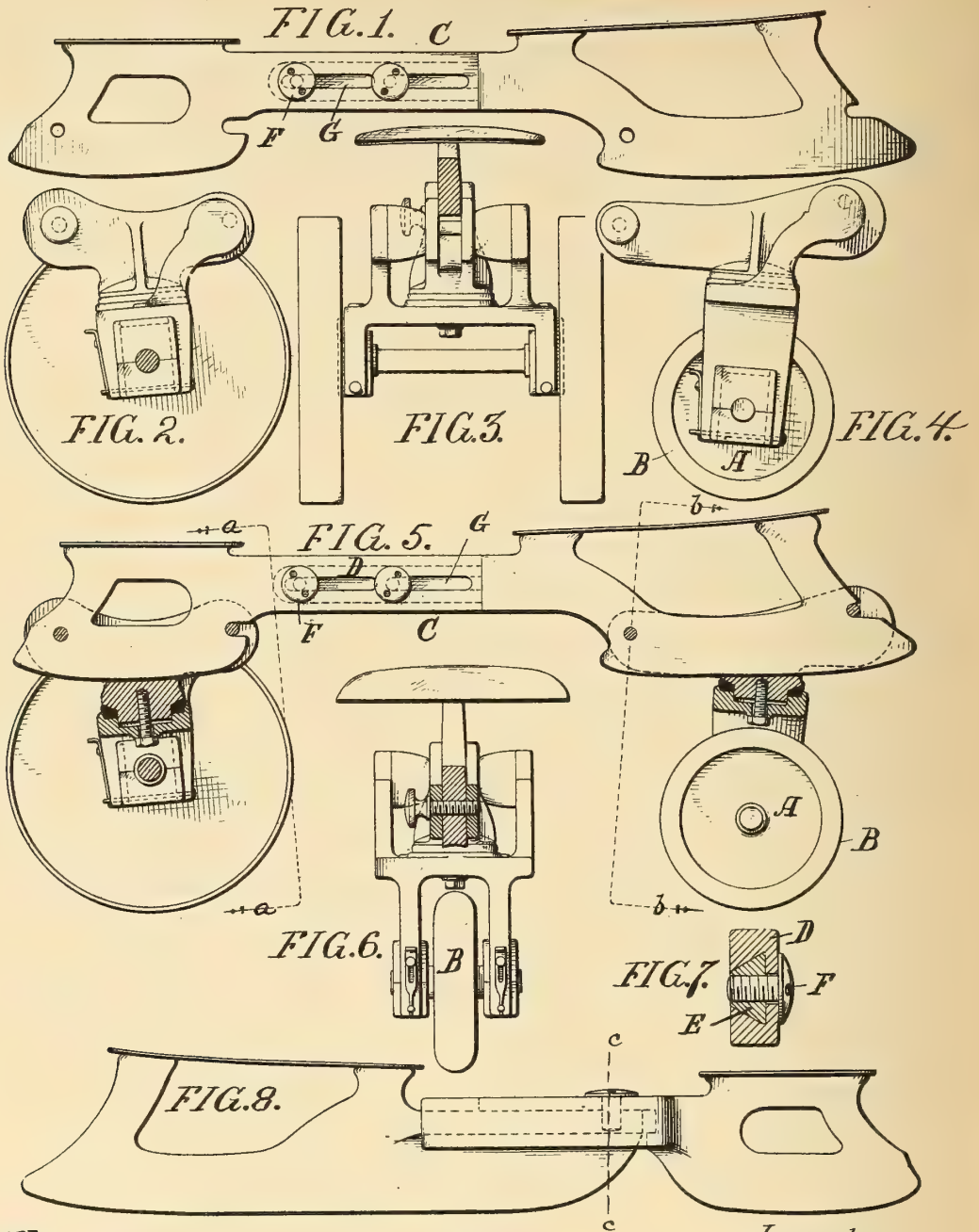
Witnesses:

S. H. NOURSE,

FRANK A. BROOKS.

(No Model.)

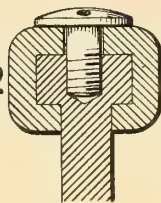
W. H. RUSHFORTH.
Combined Runner and Roller Skate.
No. 241,726. Patented May 17, 1881.



Witnesses,

John D. L. L.
John K. Rupertus.

FIG. 9.



Inventor,

Wm Henry Rushforth,
By his Attorneys,
W. C. Strawbridge,
Samuel Taylor.

UNITED STATES PATENT OFFICE.

WILLIAM H. RUSHFORTH, OF CAMDEN, N. J., ASSIGNOR OF FORTY ONE-HUNDREDTHS TO JOHN BURR AND JAMES K. STREET, OF SAME PLACE.

COMBINED RUNNER AND ROLLER SKATE.

SPECIFICATION forming part of Letters Patent No. 241,726, dated May 17, 1881.

Application filed March 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY RUSHFORTH, of Camden, New Jersey, have invented a Combined Runner and Roller Skate, of which the following is a specification.

My invention relates to skates for use either upon ice or upon floors, and it is an improvement upon the combined runner and roller skate invented by me, application for patent for which was filed in the United States Patent Office, February 26, 1881.

In the accompanying drawings, Figure 1 is a side elevation of my skate as an ice-runner; Figs. 2 and 4, side elevations respectively of the rear and front roller-trucks; Fig. 3, a front elevation of the rear truck, section being supposed through the runner on the line *a a* of Fig. 5. Fig. 5 is a side elevation of my skate as a roller-skate, the trucks being shown in central sectional elevation. Fig. 6 is a rear elevation of the front truck, section being supposed on the line *b b* of Fig. 5. Fig. 7 is an enlarged transverse section through the one of the tightening-screws of the extensible bridge-piece of the skate of Fig. 1. Fig. 8 is a side elevation of a slightly-modified form of my skate as an ice-runner, and Fig. 9 a magnified transverse sectional detail through the same on the line *c c* of Fig. 8.

Similar letters of reference indicate corresponding parts.

Generally stated, the features of improvement of my present device over my former one, above referred to, lie, first, in the application of but a single central roller to one of the trucks, as opposed to the two rollers employed in my former device; and, secondly, in such a construction of the bridge-piece or central portion of the runner as will make said bridge-piece extensible in the direction of its length, so as to accommodate the foot-pieces of the skate, whether used as an ice-runner or as a roller device, to various lengths of foot.

The construction of the runner, in all respects save in its function of being extensible, is identical with that of my former device. The construction of the roller-trucks is also identical with that of the trucks of my former device, while their method of attachment to the ice-runner is also in all respects the same.

For the accurate comprehension of the above features reference is to be made to my former application.

In my present invention, A is a single roller, Figs. 4, 5, and 6, having a rounded tread or periphery, B. It is affixed to an axle and the axle journaled in the truck, as in my former invention.

By the application of the single roller my roller-skate becomes practically a three-wheel device, in the use of which a sharper curve or turn may be made than in the use of my former device.

I prefer to apply the single-roller truck to the front of the skate; but it can, of course, be applied to the rear instead of to the front.

In the form shown in Figs. 1 and 5 the bridge-piece C is made in two parts, D and E, which dovetail within and about each other, as shown in Fig. 7.

The part D, or the embracing portion, is shown as a part of the rear runner, while the tongue or embraced portion, E, is shown as a part of the front runner. This relationship may, of course, be reversed.

F are binding screws, the threaded portions of which pass freely through slots G in the part D, and are threaded within the tongue E. By the tightening up these screws the dovetailed parts are bound together in whatever relative positions they may have been placed, subject, however, to the limitation of lengthwise movement imposed by the slots.

By the above construction, as will be readily understood, is provided a means for lengthening the runner of the skate and adjusting it fixedly to the desired length.

In Figs. 8 and 9 is shown a construction equivalent to that of Figs. 1 and 7, the extensible portion being in the form of a tongue or groove, and the device being shown applied to an ice-runner skate constructed without a bridge-piece strictly as such.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. As a combined runner and roller skate, the combination of a double ice-runner formed with an extensible bridge-piece, with two separate roller-trucks, removably applied to the

runner, substantially as shown and described,
and for the purpose specified.

2. As a combined runner and roller skate,
the combination of a double ice-runner with
5 two separate roller-trucks, one of which is pro-
vided with two rollers and the other with but
a single roller, as and for the purposes speci-
fied.

In testimony whereof I have hereunto signed
my name this 12th day of March, 1881.

WILLIAM HENRY RUSHFORTH.

In presence of—

JOHN JOLLEY, Jr.,

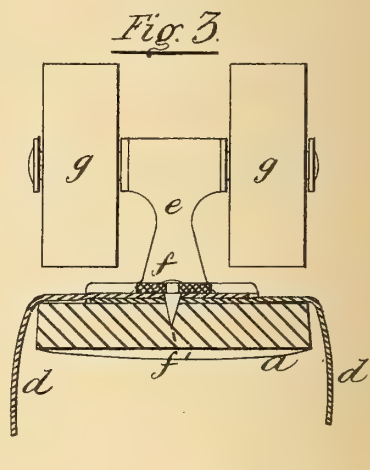
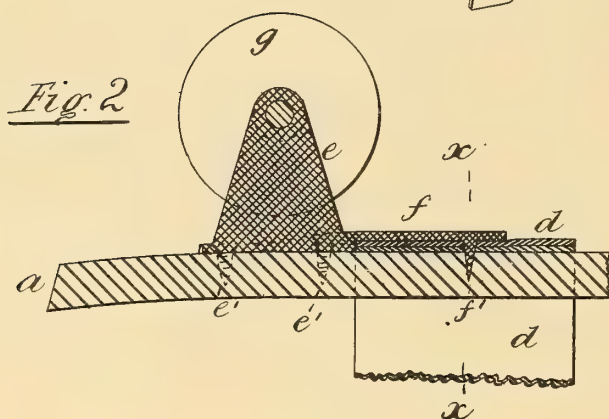
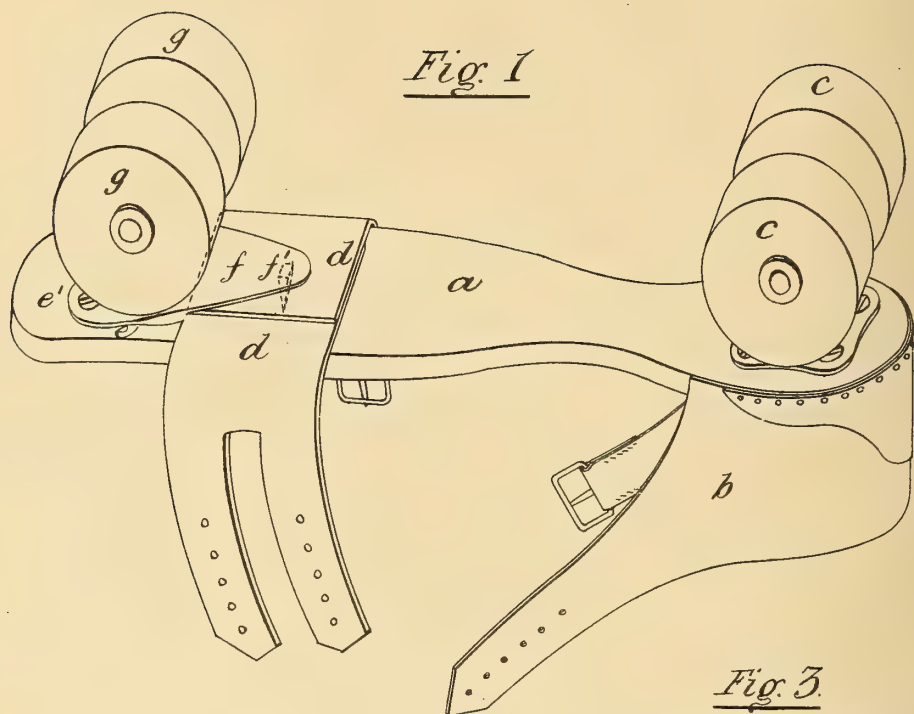
J. BONSALE TAYLOR.

(No Model.)

J. G. NORMAN.
Roller Skate.

No. 242,966.

Patented June 14, 1881.



Witnesses.

H. D. Williams
John D. Shulock

John G. Norman.
Inventor.

per Alfred Hedlock
Att'y.

UNITED STATES PATENT OFFICE.

JOHN G. NORMAN, OF NEW YORK, N. Y.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 242,966, dated June 14, 1881.

Application filed April 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. NORMAN, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful improvements in Roller-Skates, of which the following is a specification.

This invention in roller-skates relates to the manner of connecting the retaining-straps to the sole-piece, and has for its object to simplify and cheapen such connection, as well as to strengthen the bracket to which the rollers are attached.

The invention consists in forming on the roller-bracket a projecting flange to overlie the ends of the retaining-straps on the bottom of the sole-piece. Said projecting flange is provided with a pointed stud adapted to pass through the ends of the straps and into the under side of the sole-piece, thereby firmly securing the straps to the sole-piece and obviating the necessity of using screws or other devices heretofore used for this purpose.

To describe my invention more particularly, I will now refer to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a roller-skate, showing my improvements thereon. Fig. 2 is a part longitudinal section of the same, and Fig. 3 is a transverse section cut through the line *x x*.

The wooden sole-piece *a*, the instep-strap *b*, and heel-rollers *c* are of the ordinary construction.

The straps *d*, which secure the front part of the skate to the foot, are, in roller-skates as now made, generally fastened to the under side of the sole-piece *a* by means of screws; and to save the trouble and expense attending the use of these screws I construct the front roller-bracket, *e*, as shown—that is, with the projecting flange *f*, which extends over the overlapping ends of the two straps *d d* at the center of the sole-piece *a*, so as to press on them when the bracket *e* is secured to the sole-piece by means of the screws *e'*. The flange *f* is provided with the pointed stud *f'*, which passes through holes in the ends of the straps *d d* and into the sole-piece, thereby firmly holding the straps in place.

Only one pointed stud, *f'*, is shown, and is sufficient in all ordinary cases to retain the straps permanently in place; but, if desired, two or more studs may be formed on the flange *f*, and the pointed stud *f'* may be cast on the flange *f*, as shown at Fig. 2, or be made separately and then riveted thereto, as shown at Fig. 3.

The front rollers, *g g*, are fitted on a spindle passing through the bracket *e*, and the heel-rollers *c* are fitted to their supporting-bracket in a similar manner.

If two sets of straps are required at the front part of the skate, then I propose to make the bracket *e* with two projecting flanges provided with pointed studs, one at the front and the other at the rear of the bracket; and it is obvious that this improvement may be applied to the heel-bracket by changing the form of the strap *b*.

It will be observed that the flange *f* increases the bearing-surface of the bracket *e*, so that the bracket is less liable to become loosened on the sole-piece, and that the bracket *e* and straps *d d* by this improvement may be secured to the sole-piece *a* in the same time as is now required to secure the bracket only to the sole-piece.

Having now described my invention, I wish it understood that I do not claim, broadly, the roller-bracket of a roller-skate provided with a flange, under which the retaining-straps are held; but—

What I claim, and desire to secure by Letters Patent, is—

1. The improvement in roller-skates, consisting of the roller-bracket provided with a flange and pointed studs adapted to secure the straps to the sole-piece, substantially as set forth.

2. The bracket *e*, provided with the flange *f* and stud *f'*, in combination with the sole-piece *a* and straps *d d*, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 18th day of April, A. D. 1881.

JOHN G. NORMAN.

Witnesses:

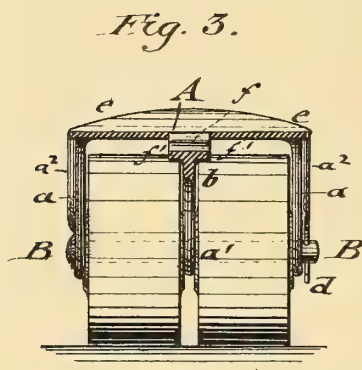
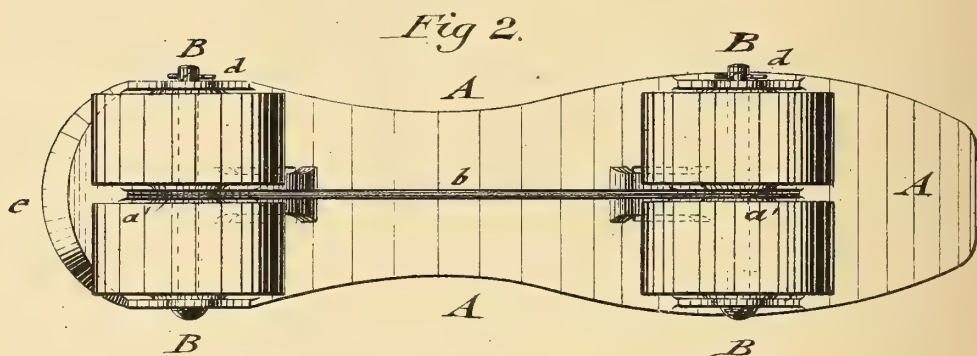
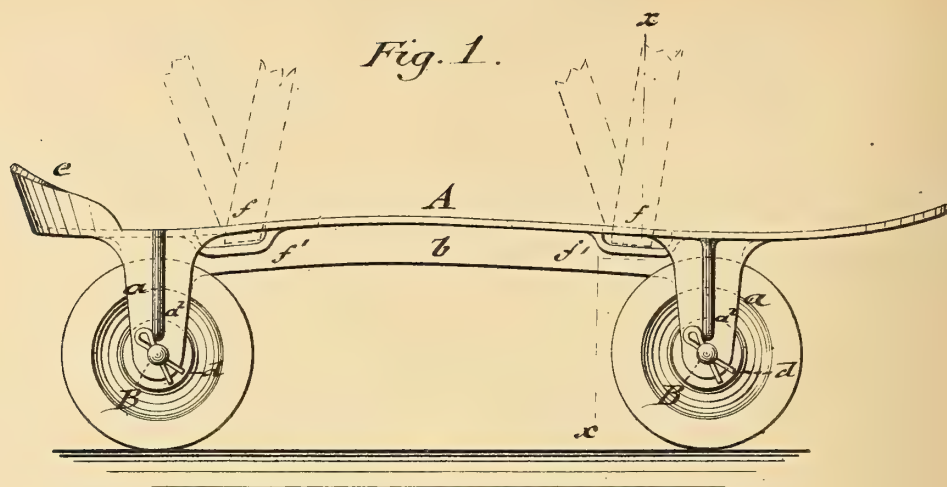
ALFRED SHEDLOCK,
H. D. WILLIAMS.

(No Model.)

W. A. SUTTON.
Roller Skate.

No. 243,323.

Patented June 21, 1881.



WITNESSES:

Carl Klug
Otto Risch

INVENTOR

William A. Sutton

BY

Paul Goepel

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM A. SUTTON, OF NEW YORK, N. Y.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 243,323, dated June 21, 1881.

Application filed May 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. SUTTON, of New York, in the county and State of New York, have invented certain new and useful
5 Improvements in Roller-Skates, of which the following is a specification.

The object of this invention is to furnish a cheap yet strong and effective roller-skate for boys and girls, which has the advantage that
10 it is composed of very few pieces, which can be assembled quickly, so as to reduce thereby the expense of the skate.

The invention consists of a roller-skate the sole-plate of which is provided at the under
15 side with a longitudinal central rib, from the ends of which extend in downward direction central and side lugs for the support for the roller-shafts. The sole-plate has central recesses and the central rib flanged recesses
20 below the same for the passage of the straps. The hind part of the sole-plate is provided with a heel-rest, cast in one piece therewith, and the side lugs with exterior central ribs, which serve as stops for the locking-keys of the roller-shafts, so as to prevent the turning of the same
25 with the rollers.

In the accompanying drawings, Figure 1 represents a side elevation; Fig. 2, a bottom view; and Fig. 3, a vertical transverse section of my
30 improved roller-skate on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the sole-plate of my improved roller-skate, which
35 is cast in one piece with downwardly-extending side lugs, *a*, near the front and rear ends of the sole-plate, which lugs carry the roller-shafts B. At the under side of the sole-plate A is cast a longitudinal central rib, *b*, from the
40 ends of which extend in downward direction and in line with the side lugs, *a*, intermediate lugs, *a'*, through which the shafts of the rollers pass, they serving to separate the rollers at the front and hind part of the skate from each
45 other. The shaft B is provided at one side with an enlarged head and at the other side with a diametrical hole, through which a spring-key, *d*, or other fastening for retaining the shaft, is passed. The outer side lugs, *a*, are provided
50 with raised center ribs or other equivalent stop

devices, *a*², for the purpose of arresting the spring-keys *d*, and preventing thereby the roller-shafts B from turning with the rollers.

At the rear end of the sole-plate A is arranged an inclined heel-support, *e*, of segmental
55 shape, which is cast, like the bottom rib and side lugs, in one piece with the sole-plate, and which extends along the rear edge of the sole-plate from one side lug to the other.

The straps are applied to the sole-plate by
60 providing the same with central recesses, *f*, one in front of the hind rollers and the other somewhat back of the front rollers, and casting the longitudinal bottom rib with depressed side flanges, *f'*, between which and the sole-
65 plate are formed transverse guide-slots for the straps, as shown clearly in Figs. 1 and 3.

As the sole-plate is cast in one piece with the roller-supporting lugs and the strap-holding devices, all that is necessary to complete
70 the skate is to apply the rollers, roller-shafts, spring-keys, and straps thereto, the whole forming a roller-skate of cheap and simple construction, yet of considerable durability and strength.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a roller-skate, the combination of a sole-plate, having side lugs and intermediate lugs cast in one piece therewith, with front
80 and rear rollers, and transverse roller-shafts secured to the side lugs, substantially as and for the purpose set forth.

2. In a roller-skate, a sole-plate having roller-supporting side and center lugs cast in one
85 piece therewith, substantially as described.

3. In a roller-skate, a sole-plate cast in one piece with downwardly-extending side and central lugs, and with a longitudinal bottom
90 rib that connects the center lugs, substantially as set forth.

4. In a roller-skate, a sole-plate having a longitudinal bottom rib at the under side, central recesses, and transverse slots formed below the sole-plate by depressed sidewise-extending
95 flanges of the bottom rib, substantially as set forth.

5. In a roller-skate, a cast-metal sole-plate having side and central lugs, strengthening bottom rib, and a segmental heel-plate which
100

extends along the rear edge of the sole-plate from one side lug to the other, substantially as set forth.

6. In a roller-skate, the combination of the
5 sole-plate having side and central roller-sup-
porting lugs cast in one piece therewith, the
side lugs having raised exterior ribs or stops,
with front and rear rollers, and transverse shafts
secured by spring-keys, the spring-keys being
10 stopped by the raised ribs of the side lugs, so

as to prevent the turning of the shafts with the rollers, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 14th day of April, 15 1881.

WILLIAM A. SUTTON.

Witnesses:

PAUL GOEPEL,
CARL KARP.

(No Model.)

E. J. COX.
ROLLER SKATE.

No. 243,761.

Patented July 5, 1881.

Fig. 1.

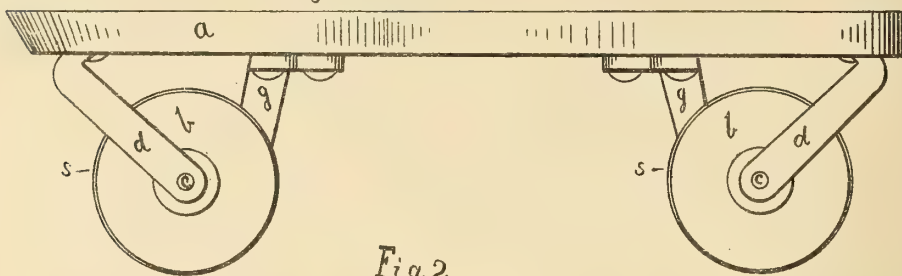


Fig. 2.

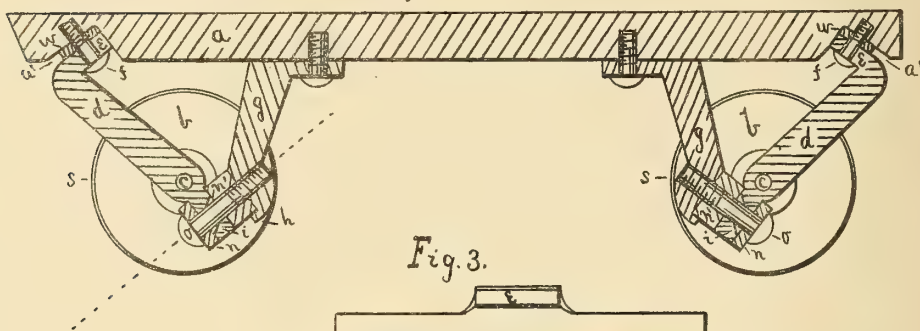


Fig. 3.

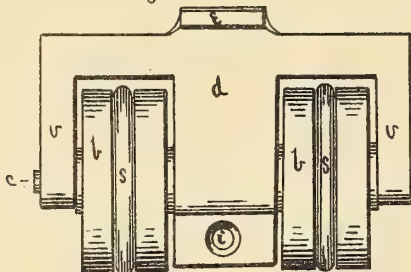
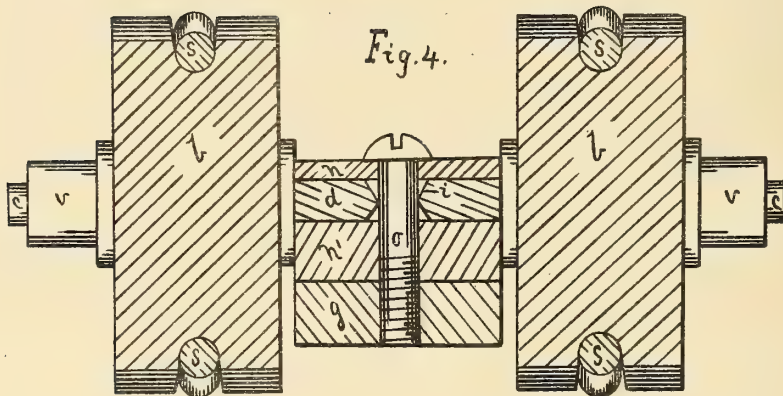


Fig. 4.



Witnesses
George F. Robinson
James W. Holcomb

Inventor
Edward J. Cox
by Bradford Howland
Attorney

UNITED STATES PATENT OFFICE.

EDWARD J. COX, OF RAVENNA, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 243,761, dated July 5, 1881.

Application filed April 7, 1881. (No model.)

To all whom it may concern :

Be it known that I, EDWARD J. COX, of Ravenna, Portage county, Ohio, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification.

The nature and object of my invention is a roller-skate, in which the axle of each pair of rollers is supported by an inclined hanger whose upper end is pivoted to the bottom of the foot-plate, and the lower end supported between two rubber springs by a screw-bolt in a rigid hanger attached to the bottom of the foot-plate.

In the drawings, Figure 1 is an elevation. Fig. 2 is a vertical longitudinal sectional view through the center of the foot-plate. Fig. 3 represents the inclined hanger of a pair of rollers. Fig. 4 is a section, on an enlarged scale, at the dotted line in Fig. 2.

The bottom of foot-plate *a* is recessed at *a'* near each end. Each pair of rollers *b* rotate on shaft *c*, which is supported by the inclined hanger *d*. The upper end of hanger *d* is pivoted through lug *e* and rubber spring *w* by pin *f* in recess *a'* to plate *a*. Below shaft *c* hanger *d* has a perforation, *i*, through which it is bolted between two rubber springs, *n n'*, by screw-bolt *o* to the rigid hanger *g* attached to the bottom of plate *a*. The springs *w* and *n'* slightly yield to the stroke of the rollers on the floor, and thus lessen the noise and prevent a sudden jar to the skater. Hanger *g* has a flange, *h*, at its lower end, to retain rubber spring *n'* in position. The perforation *i* of hanger *d* is countersunk on both sides of the hanger, to allow the latter to turn on its pivot *f*. The rubber spring *n'* is compressed on one side by tipping foot-plate *a* when moving on a curve.

When a person using the skates is moving in a curve the greater weight on rollers *b* at the side of plate *a* which is tipped down compresses each spring *n n'* on the opposite side from the other and turns the inclined hangers *d* on their pivots *f*. The center of the axis of shaft *c* is in line with pivot *f*, and the directions of shaft *c*, pivot *f*, and screw-bolt *o* are at right angles to each other. Each hanger *d* turns in the opposite direction from the other

by reason of their being convergently inclined. When the pressure of the foot on plate *a* restores it to a horizontal position, the reaction of the compressed rubber springs *n n'* turns hangers *d* back again to a position in which the rollers *b* will move in a straight line.

The roller-shaft *c* has its bearings in the outer arms, *v*, of hanger *d*, and also in the central part of the hanger, which is bolted through springs *n n'* to hanger *g*.

Roller *b* has a circumferential groove, *x*, at the middle of its face, in which is placed the rubber ring *s*, a cross-section of which is circular. This ring is solid, to give it firmness, and it extends but slightly beyond the circumference of the roller, that the weight or pressure on plate *a* may compress ring *s* entirely within the groove and allow the whole width of the roller-face to be in contact with the floor.

The purpose and function of the rubber ring *s* is to lessen the noise of the rollers by preceding them in contact with the floor, and also to prevent lateral slipping of the rollers on the floor.

I claim as my invention—

1. In roller-skates, the inclined hangers *d*, converging downward, and each being pivoted at its upper end to the foot-plate *a*, and provided with the countersunk perforation *i* at its lower end, and with rollers *b* and shaft *c* intermediate the perforations and the upper pivot, in combination with two rubber springs, *n n'*, screw-bolt *o*, and rigid hanger *g*, the springs *n n'* being on opposite sides of hanger *d*, and the screw-bolt *o* passing through the springs and countersunk perforations into the rigid hanger, substantially as and for the purpose described.

2. In roller-skates, the inclined hangers *d*, pivoted at their upper ends to the foot-plate *a*, and provided with rubber spring *w* between the hanger and foot-plate, in combination with rollers *b*, rubber springs *n'*, screw-bolts *o*, and rigid hangers *g*, substantially as described.

EDWARD J. COX.

Witnesses:

BRADFORD HOWLAND,
GEORGE F. ROBINSON.

(No Model.)

J. K. ROSS.
ROLLER SKATE.

No. 243,979.

Patented July 5, 1881.

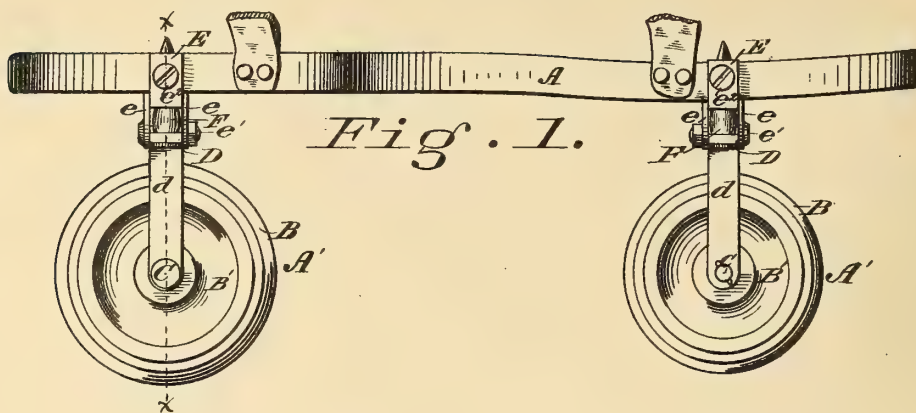


Fig. 2.

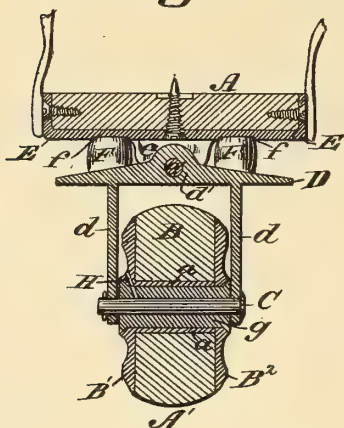


Fig. 3.

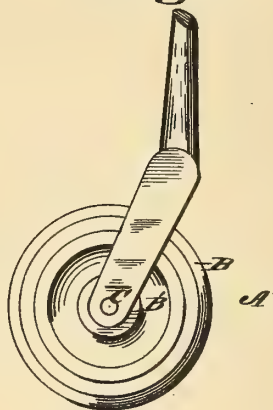
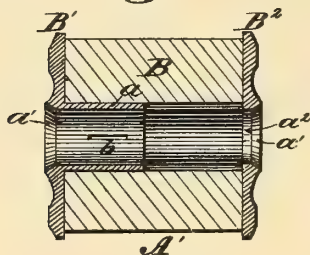



Fig. 4.



Attest.

E. Hill.
J. W. Stahl.


Inventor.
James K. Ross,
per. Wm. Hubbell Fisher,
Atty

UNITED STATES PATENT OFFICE.

JAMES K. ROSS, OF SPRINGFIELD, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 243,979, dated July 5, 1881.

Application filed March 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES K. ROSS, of Springfield, in the county of Clarke, State of Ohio, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

The object of my invention is to provide a roller-skate that will be elastic, yet firm and noiseless.

One feature of my invention consists in the particular construction of the roller, and another feature consists in the particular method of connecting the roller to the foot-plate of the skate. These features will be hereinafter fully described.

The first-named feature of my invention may be advantageously employed in the manufacture of furniture-casters, &c.

Referring to the drawings forming part of this specification, Figure 1 is a side elevation of a roller-skate constructed according to the various features of my invention. Fig. 2 represents a transverse section of a skate, taken through the line *xx* of Fig. 1. Fig. 3 represents the relative position and form of the various elements forming the roller before the latter is completed. Fig. 4 represents one feature of my invention as applied to a furniture-caster.

A is the foot-plate of the skate, and *A'* the rollers. These rollers consist of the rubber disk B and the metal disks *B'* *B*². When the roller is completed the rubber disk is, as shown in Figs. 1 and 2, of greater diameter than the metal disks, so that the rubber disk is the only part of the roller that will come in contact with the floor or ground; but before the rubber disk is placed between the metal disks it is of a less diameter than the metal disks, as shown in Fig. 3, and much thicker than it is when the roller is completed.

From the inner face of the disk *B'* projects the tube or hollow box *a*, of a suitable length to come in contact with the inner face of the disk *B*² when the rubber is compressed, and the roller is completed. The disk *B*² has a central opening, *a*², the diameter of which is equal to the diameter of the opening through the tube *a*. The outer portion of the openings through the disks *B'* and *B*² is countersunk, as shown at *a'*. The rubber disk B has a central perforation suffi-

ciently large to admit the tube *a*. This rubber disk is placed between the metal disks *B'* and *B*², the tube *a* being introduced into the opening in the rubber disk, as shown in Fig. 3. These disks are now subjected to heavy compression until the end of the tube *a* comes in contact with the inner face of the disk *B*². This compression enlarges the diameter of the rubber disk, so that it will extend beyond the edge of metal disks *B'* and *B*², as shown. Before the disks are relieved from compression molten metal, such as brass, Babbitt metal, &c., is poured into the tube *a* and allowed to harden. This filling, having entered the countersunk openings *a'*, acts, when hardened, as a rivet to hold the disks together. As a precautionary measure, to prevent the filling from slipping or turning, recesses *b* may be formed in the tube *a*, and the molten metal enters these recesses and forms a stud which prevents any slipping. The roller may now be removed from the press. A hole is now bored through the center of the roller for reception of the bolt C, around which latter the roller turns. One of these disks, *B'* *B*², is preferably provided with an orifice, as H, whereby oil or other suitable lubricating substance can be introduced to the bolt C, thereby enabling the roller to turn easily upon said bolt, and thus facilitating the use of the skate, and preventing friction, and consequent wear of the bolt C, and that part of the roller which rests thereon.

When preferred, the disks *B'* *B*² and rubber disk B may be secured together by a rod or axle rigidly attached to said disks and projecting from each side of the roller, and turning in suitable bearings in the arms *d*. The mode of attaching this axle to the disks may be by retaining the tube *a* and running metal in and around the axle and between that and the rod, or any other suitable mode may be employed. The metal disks *B'* *B*² need not necessarily be solid, as shown, but may be in the form of a spider, or any other desired form, so long as they effect a suitable compression of the rubber disk.

The number of rollers may be increased at will, and arranged as desired in reference to the foot-plate. The rollers are preferably located the one behind the other, as shown, and are preferably so placed with reference to each

other that the central plane of revolution of each roller shall be coincident with the longitudinal axis of the foot-plate. The roller A' is supported in a yoke, D, the bolt C passing through the arms *d* of said yoke and secured in position in any suitable manner, preferably, as here shown, by the bolt C, having at one end a head, and a hole through the other end, through which a pin is passed and so bent as to be securely prevented from slipping out of said hole. This yoke D is provided with a lug, *d'*, which fits between two ears, *e*, projecting from the clamp E, and a bolt, *e'*, passes through said ears and the lug *d'*, thus connecting the yoke D to the clamp E, which latter is secured to the foot-plate A by screws *e*². The body of this clamp E is provided with two openings, *f*, into each of which is placed one end of a cylindrical piece of rubber, F, the other end of said piece resting against the upper side of the yoke D. These rubbers F act as springs, which, by being compressed between the clamp E and the yoke D, permit of a limited amount of lateral vibratory motion of the yoke D in one direction or the other, according as one or the other rubber is compressed. Spiral springs may be substituted for these rubbers F, should the manufacturer so desire, but they are not so effective as the rubbers.

By the construction above described it will be seen that the roller will be very firm and yet sufficiently elastic to roll noiselessly over the ground or floor, as the compression to which the rubber disk is subjected renders it very solid, yet giving sufficient elasticity around its periphery to accomplish the purpose desired.

It will also be evident that the rubber rollers, in connection with the particular mode which I employ of connecting the rollers to the foot-plate, form a skate which can be worn with comfort by the skater, as it is not so liable to tire the ankles of the wearer as are the skates employing non-elastic rollers and a non-elastic connection between said rollers

and the foot-plate of the skate. When the foot-plate is of metal the clamp E may be dispensed with, in which case the ears *e* will be attached directly to the foot-plate, suitable recesses for the reception of the springs F being formed in or connected to the foot-plate.

It will be obvious that the particular form of roller described above may be used with advantage in casters for furniture and like articles, and when so used will fall within the scope of my invention.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. An elastic wheel or roller for skates, consisting of the metal disks B' B², the former being provided with the hollow tube *a*, and the latter with central opening, *a*², and the rubber disk B, said rubber disk being of less diameter than the metal disks before the latter are secured together and compressed between said metal disks in the manufacture of the roller to such an extent as to cause the rubber to project beyond the metal disks when the roller is completed, substantially as and for the purposes specified.

2. The herein-described process of manufacturing rollers for skates, and the like, consisting of the following steps: first, the employment of two metal disks, one or both being provided with a central tube and a tubular section of rubber, said section being longer than the width of the finished roller, and of less diameter than the metal disks; second, compressing said rubber section between the metal disks until the rubber projects beyond the metal disks; third, filling the central tube with molten metal, which is allowed to harden to hold the metal disks together; and, lastly, boring the center of the roller for reception of the axle, all substantially as and for the purposes specified.

JAMES K. ROSS.

Attest:

WM. E. JONES,
E. R. HILL.

(Model.)

W. H. BLISS.
ROLLER SKATE.

No. 244,372.

Patented July 19, 1881.

Fig. 1.

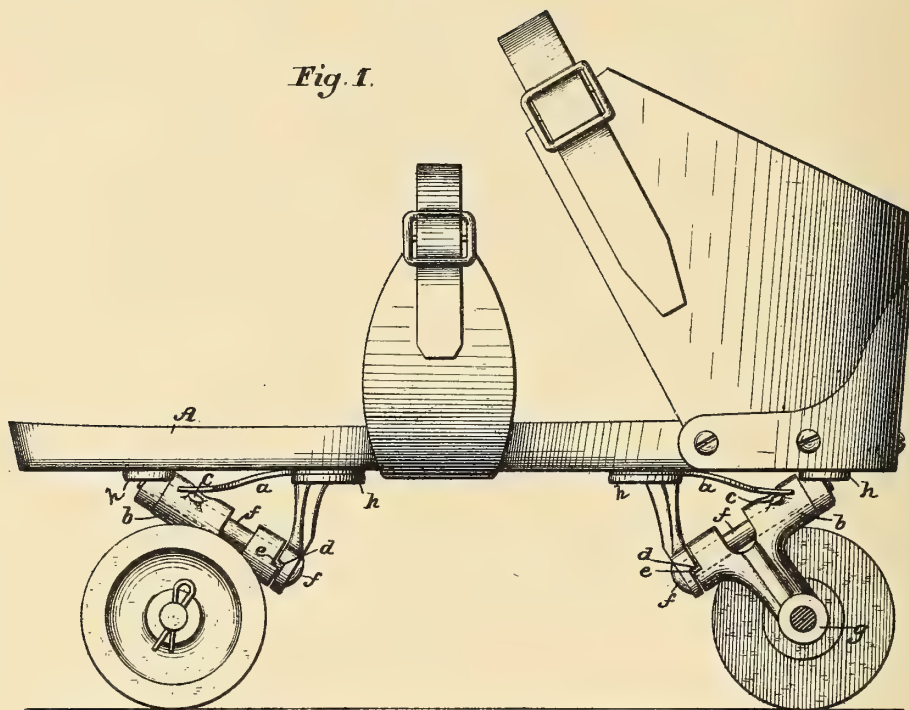
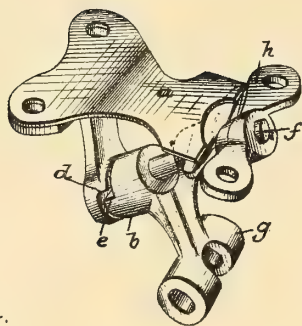


Fig. 2.



Attest.

J. Henry Kaiser.
Allen Terry

Inventor:

William H. Bliss.

UNITED STATES PATENT OFFICE.

WILLIAM H. BLISS, OF NORWICH, CONNECTICUT.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 244,372, dated July 19, 1881.

Application filed June 11, 1881. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM H. BLISS, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates particularly to devices to allow of turning the rolls in guiding the skates and yet positively stopping them at certain points, while sufficient yield is allowed by a spring acting before the positive stops are engaged with each other.

In the accompanying drawings, Figure 1 represents a side elevation of a roller-skate with my improvements applied thereto. Fig. 2 is a view of the hanger detached from the sole-plate.

A represents the sole-plate or platform. *h* is the attaching-plate of the roller-hanger.

b is a sleeve, attached by a connecting-piece to the sleeve *g*, which carries the roller-pintle.

cc are small projecting arms, one of which is located upon each side of the sleeve or coupling-eye *b*.

dd are shoulders or stops formed on the long depending part of the hanger, one on each side of each hanger of the skate-rollers.

ee are corresponding stops or shoulders on the sleeve *b* of the upper part of roller-pintle-carrying piece. *ff* are the pintles or journal-rods holding the roller-carrier.

aa are plate-springs, secured to the sole-plate by the same screws that secure the part *h''* of the attaching-plate of the hanger.

My invention consists in the stop-shoulders respectively located upon the depending part of the hanger and the sleeve forming a part of the roller-carrying frame, and combining therewith the plate-spring and the projecting arms of the sleeve or coupling-eye *b*.

It will be seen that the arrangement of the stop-shoulders is such that a limited amount of motion or play is allowed in turning the direction of the skate, while too great motion

is checked at once by the stop *b* on the coupling-eye striking the stop-shoulders *d* on the depending part of the hanger. In order that the turning motion be not too easily made, or made unintentionally when the skater is not trying to turn his direction, the plate-spring *a* is introduced, bearing at its free end upon arms *cc* projecting from the coupling-eye *b*. It will be seen that thus, as force is gradually applied upon either the one side or the other of the foot in turning, the roller-carrying part yields gradually, and in the end the position-stops alluded to prevent any further turning. Without the springs the stops would too suddenly check the turning motion, and without the position-stops the checking is not done with sufficient promptness and positiveness.

I am well aware that stops of various sorts have been used for the same purpose as mine; but I am not aware of any that are located as mine, so as to be so readily constructed in forming the hanger and coupling-eyes.

I am also aware that Winslow and others use rubber springs to serve as a yielding stop, and I do not claim such. I have endeavored to provide a stop that shall not, by the wearing of the rubber or its exposure to weather and oil, change from time to time, as it wears the point at which the turning must stop.

I do not claim, broadly, the projecting arms *cc*.

What I claim as my invention is—

1. The abrupt stops or shoulders located upon the depending part of the hanger and the sleeve or coupling-eye, respectively, all as and for the purposes set forth.

2. The combination of the stops or shoulders on the hanger and coupling-eye, respectively, and the plate-spring acted upon by the arms *cc* upon either side of said coupling-eye, all as and for the purposes set forth.

WILLIAM H. BLISS.

Witnesses:

ALLEN TENNY,
FRANK T. BROWN.

(Model.)

M. C. HENLEY.

ROLLER SKATE.

No. 245,950.

Patented Aug. 23, 1881.

Fig. 1.

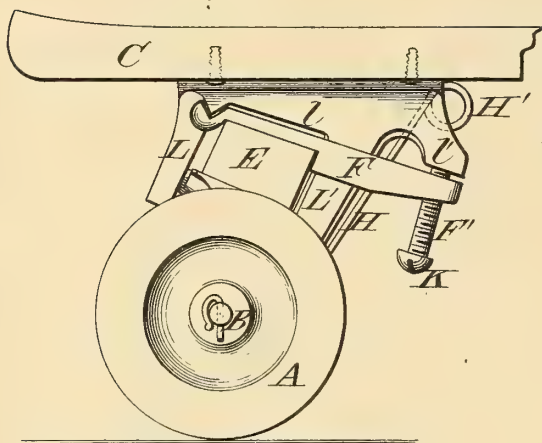


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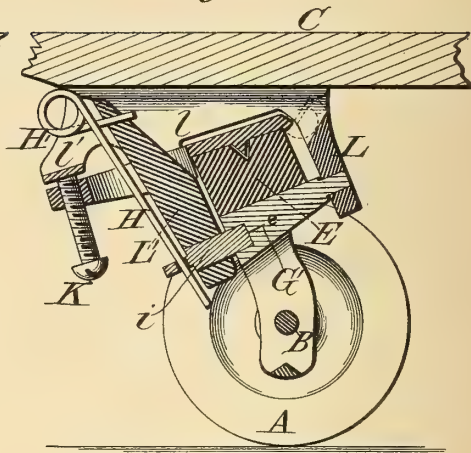


Fig. 3.

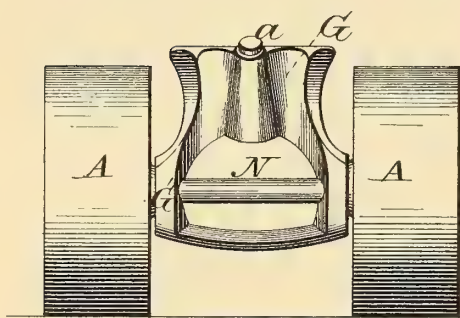
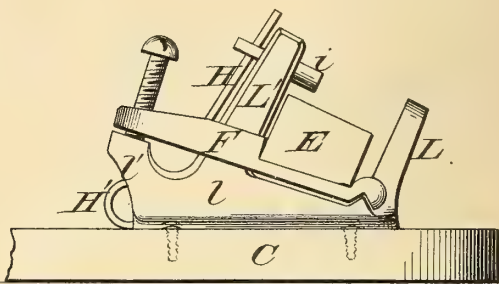


Fig. 4.



Witnesses:
W. J. Dennis
W. H. Corner

Inventor:
Micajah C. Henley

UNITED STATES PATENT OFFICE.

MICAJAH C. HENLEY, OF RICHMOND, INDIANA.

ROLLER-SKATES.

SPECIFICATION forming part of Letters Patent No. 245,950, dated August 23, 1881.

Application filed May 23, 1881. (Model.)

To all whom it may concern:

Be it known that I, MICAJAH C. HENLEY, of Richmond, Wayne county, Indiana, have invented certain new and useful Improvements in Roller-Skates; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the drawings which accompany this specification, forming a part thereof, and to the letters of reference marked thereon.

My invention consists in making the axle upon which the hanging frame of the foot-piece rests, and upon which it oscillates, detachable and capable of being easily and quickly removed while the skate is on the foot, by this means allowing the trucks and truck-frame to be detached from the upper portion of the skate.

My improvement further consists in securing the said axle firmly in position by a lever-spring.

The nature of my improvement consists in the employment of an independent adjustable pressure-plate in conjunction with a rubber spring, by which the rigidity of the rubber spring is graduated, and its flexibility made to conform to the weight of the wearer by means of a temper-screw operating on the said pressure-plate.

It further consists in the use of a removable axle or pivot-pin, in combination with a spring and lever, said axle or pin connecting the truck-frame with the foot-piece, and permitting them to be disconnected at the will of the wearer without being removed from the foot.

In the drawings, Figure 1 is a side elevation of the front end of the skate. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is an end elevation of the truck or wheels and frame. Fig. 4 is an inverted plan of the platform of a section of the skate, showing the metallic frame by which the trucks are attached to the skate-platform, and the detachable axle and spring in position.

Like letters refer to like parts.

In Fig. 1, C is the platform or foot-piece of the skate. A is the wheel. B is the axle on which the wheel revolves.

L L' are supports secured to the platform of the skate, as shown in Fig. 2, the inside surfaces of which are parallel to each other, and

are constructed at an angle with the plane of the platform C, L being the shorter. These supports L L' are united at the top by a plate, l, upon which the platform rests and to which it is secured. The support L is made shorter than L', producing an angle in the bearings. The plate l, which forms the top of the frame, in connection with the supports L L', is extended forward in the form of a curved lug, l', which forms a bearing for and receives the point of the temper-screw K.

F is a pressure-plate, pivoted at the rear end on a V-shaped rib on the plate l, the corresponding end of the pressure-plate F being provided with a recess across it of the shape and form corresponding with the rib upon which it rests, and which allows a perpendicular motion of the opposite end.

The lower surface of the plate F is provided with a recess traversing its width to receive and retain in place a rectangular spring; and K is a temper-screw working in the end of the pressure-plate, which is provided with a thread forming a nut for said screw, by which a greater or less pressure is given to the spring E. The screw K has its point resting on the lug l'.

The pressure-plate is constructed with an opening or slot, in which the support L' is fixed, and which also incloses the lever H of the spring H'. The pressure-plate F is allowed a vertical motion on the support L', which at the same time prevents a lateral motion.

E is a rectangular spring, made of rubber or other suitable material, placed in a position between the under surface of the pressure-plate F and the upper surface of the truck-frame G', which is fitted to receive it. By the elasticity of the spring a lateral rocking motion is permitted in the platform of the skate, at the will of the operator, and which is graduated and regulated by the density imparted to the spring E by the action of the temper-screw K on the pressure-plate F. The support L has a hole in its lower portion to receive a lug, a, attached to the upper surface of the truck-frame G'. The support L' is provided with a similar hole in corresponding position to receive the axle i.

The upper plate of the truck-frame G' has an opening, e, at a point opposite to the lug a, in which the end of the axle i, after passing

through the support L' , is received. The lug a and the axle i thus form bearings upon which the platform and the devices attached are permitted a lateral rocking motion. The axle i is formed with an eye at its outer end to receive the lever H of the spring H' , which is attached to the rear end of the plate l . The truck-frame G' is in stirrup form, the upper portion made with a plain surface, the front of which is provided with a lug, a , and the rear of which has an opening, e . The sides of the truck-frame, near the lower part, are bored to receive the axle of the truck upon which the wheels revolve, and constitute the bearings of the frame G' of the truck, and also serve as shoulders for the inside of the wheels. N is the axle, having its bearings in the sides of the truck-frame G' , and provided with openings at the ends to receive such devices as may be required to confine the wheels.

I am aware that a pressure-plate has been used in connection with a temper-screw operating on its surface to give greater density to the spring, in which the screw only operated in one direction; but it will be seen that in this case the end of the pressure-plate is both raised and lowered by the action of the screw K , while the opposite end is at rest.

I am also aware that a set-screw has been used in the hanger-frame, the point of which formed a pivot upon which the rocking motion of the upper portion of the skate was permitted, whereas the axle i , as herein described, forms a stronger and more durable bearing, and is held rigidly in position by the spring H' and lever H , allowing it to be withdrawn quickly and without the use of tools, thus disconnecting the trucks from the foot-piece without removing the skate from the foot.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The pressure-plate F , pivoted at one end and adjustable at the opposite end, provided with a recess on its lower surface, and constructed with a slot or opening, in the manner and for the purpose as herein described.

2. The combination of the temper-screw K , the pressure-plate F , and bearing l' , as set forth.

3. The combination of the axle i , spring H' , and lever H , in the manner and for the purposes as set forth.

MICAJAH C. HENLEY.

Witnesses:

W. T. DENNIS,
C. J. GEIER.

R. GORNALL.

PEDO MOTOR.

No. 246,755.

Patented Sept. 6, 1881.

Fig. 1.

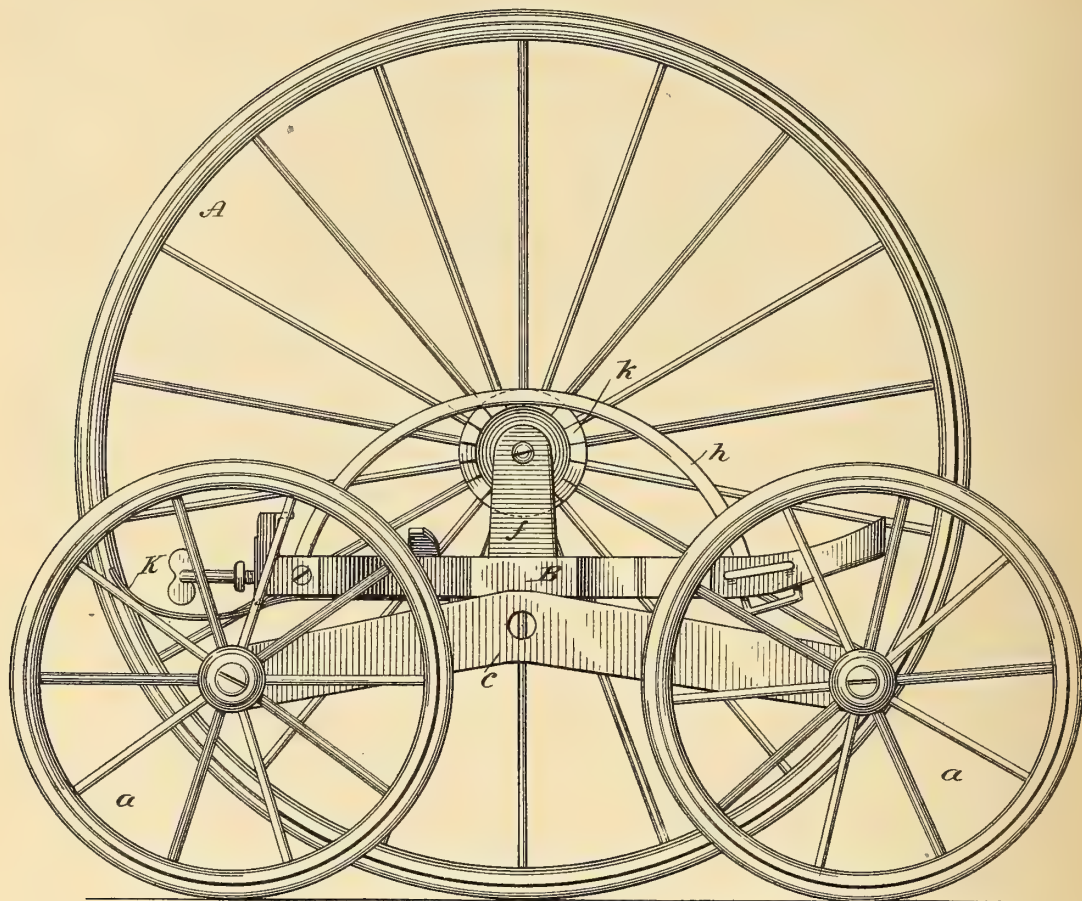
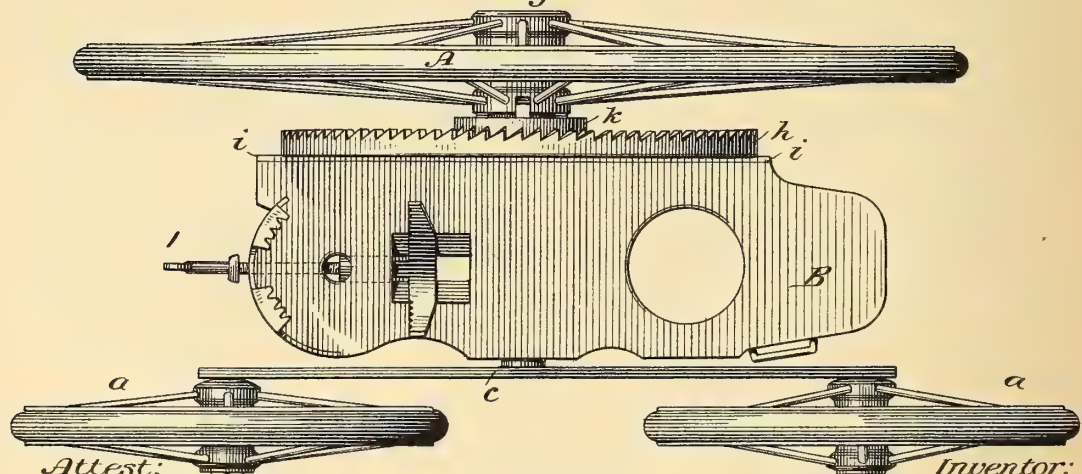


Fig. 2.



Attest:
R. H. Barnes
F. L. Middleton

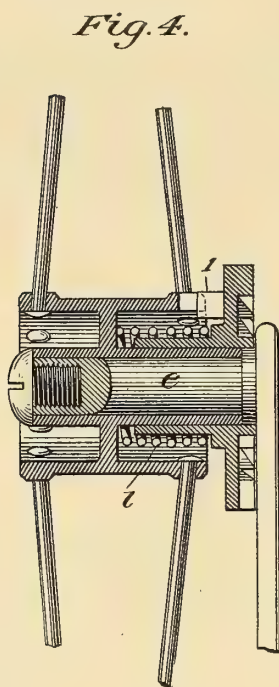
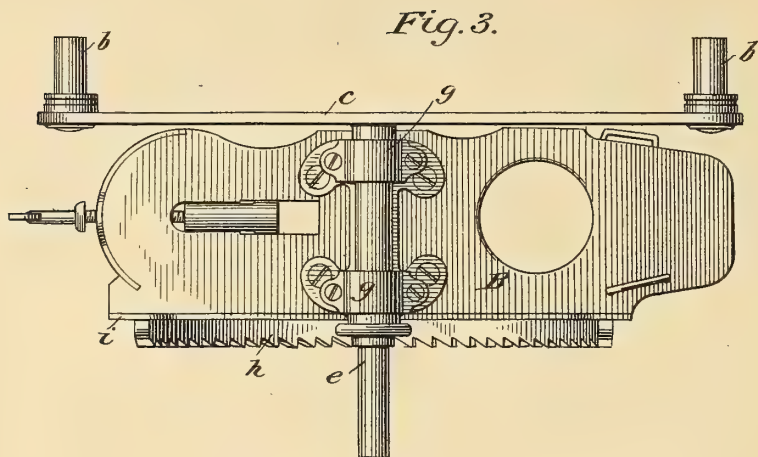
Inventor:
Richard Gornall
by Eli Speer atty

R. GORNALL.

PEDO MOTOR.

No. 246,755.

Patented Sept. 6, 1881.



Attest:

R. J. Barnes.

F. L. Middleton

Inventor:

Richard Gornall.

By Ellis Spear

Atty

UNITED STATES PATENT OFFICE.

RICHARD GORNALL, OF BALTIMORE, MARYLAND.

PEDO-MOTOR.

SPECIFICATION forming part of Letters Patent No. 246,755, dated September 6, 1881.

Application filed April 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, RICHARD GORNALL, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and useful Improvement in Pedo-Motors; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement upon the device for which a patent was granted me on the 25th day of November, 1879, and numbered 222,034.

It consists of certain details of construction, hereinafter set forth, whereby the apparatus is made more simple, lighter, more attractive, and is greatly improved in its operation.

In the accompanying drawings, Figure 1 is a side view; Fig. 2, a plan view; Fig. 3, a plan view of the frame from beneath; Fig. 4, a section of the clutch.

In this device there are two small supporting-wheels, *a a*, and a large supporting and drive wheel, *A*, as in my said patent:

The improvements relate more particularly to the frame-work, the lowering of the foot-board, and to the arrangement of the rack-segment and ratchet-wheel. The supporting-wheels *a a* are placed upon journals *b b* in the end of the bar *c*. A little in rear of the center of this bar is fixed a shaft, *e*, which I prefer to make of a piece of metallic tubing. One end of it is supported in a hollow boss in the bar *c*, and the other in a like boss in the vertical bar or arm *f*. Upon this shaft *e* rests the foot-piece *B*, being held thereto by means of clamps *g g*, and adapted to oscillate freely on said shaft. On the side next the drive-wheel is a rack-bar, *h*, connected to the foot-piece at the ends and arranged in a vertical plane, so as to bring the toothed side in contact with a ratchet-wheel placed upon the inner end of the hub of the drive-wheel. I prefer to strengthen the foot-piece and rack-bar on this side by means of a strip of metal, *i*, fixed to the edge and extending underneath the ends of the rack-bar.

The ratchet-wheel *k* is loose upon a journal inside of the hub of the drive-wheel, but is made to turn with said wheel by means of studs *l l*, which project into recesses in the hub. The ratchet-wheel is pressed into connection with the rack-segment by means of a spring, *l*, and there is sufficient play allowed to the ratchet-

wheel or clutch laterally to permit it to recede toward the hub and allow the teeth of the rack-segment to pass when said segment is moved backward.

It will be observed that the teeth of the rack-segment have their forward faces in a plane transverse to the apparatus and rear faces inclined. The teeth of the ratchet-wheel are similar, but in reversed position, so that when the forward part of the foot-piece is depressed the wheel is turned to move forward. When the heel is depressed the bar slips upon the ratchet-wheel without giving motion to the drive-wheel.

The journal of the drive-wheel is fixed upon the upper end of the bar or arm *f*. The whole frame-work is thus reduced to the horizontal and vertical bars, the transverse shaft, and the journals. The foot-piece is lowered without reducing the diameter of the wheels, so that larger wheels may be used and a corresponding increase in speed attained. It will be observed, also, that the rack-segment is bent upon a curve the center of which is the center of the shaft *e*, and that its upper edge is arranged to move approximately flush with the upper edge of the ratchet-wheel.

The form of the ratchet-connections is not essential, as other forms may be substituted for that shown—as, for instance, ball-connections—whereby the noise of the teeth may be obviated.

The frame-work may be formed of any suitable metal, and the method of constructing the special parts may be varied in ways well known to those skilled in the art of working in metals.

I contemplate casting the frame in one piece, in which case the shaft which supports directly the foot-piece would be solid, the general form of the frame remaining the same.

The brake, which is a necessary attachment in an apparatus of this character, is represented at *K*. It consists of a flat bar of spring steel, preferably turned up slightly at the end. It is attached to the under surface of the foot-piece, and projects to the rear a sufficient distance so that it may be made to bear upon the ground by putting the foot a little in advance and depressing the heel. One or both of the foot-pieces may be provided with the brake.

Having thus described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. In combination with the wheels *a a* and *A*, the bars *c* and *f*, supported upon the wheels
5 and supporting the foot-piece, substantially as described.

2. In combination with the frame-work and the foot-piece, the rack-bar *h* and ratchet-wheel *k*, said bar being arranged upon the foot-piece
10 and adapted to engage with the wheel upon the inner end of the hub, substantially as described.

3. The combination of the bearing and drive wheels with a foot-piece placed lower than the axis of the drive-wheel, and with a driving-
15 segment fixed to the foot-piece and projecting above it to operate upon the wheel, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD GORNALL.

Witnesses:

WM. H. BAYZAUD,
JOSHUA M. MYERS.

(No Model.)

W. A. SUTTON.

ROLLER SKATE.

No. 249,556.

Patented Nov. 15, 1881.

Fig 1.

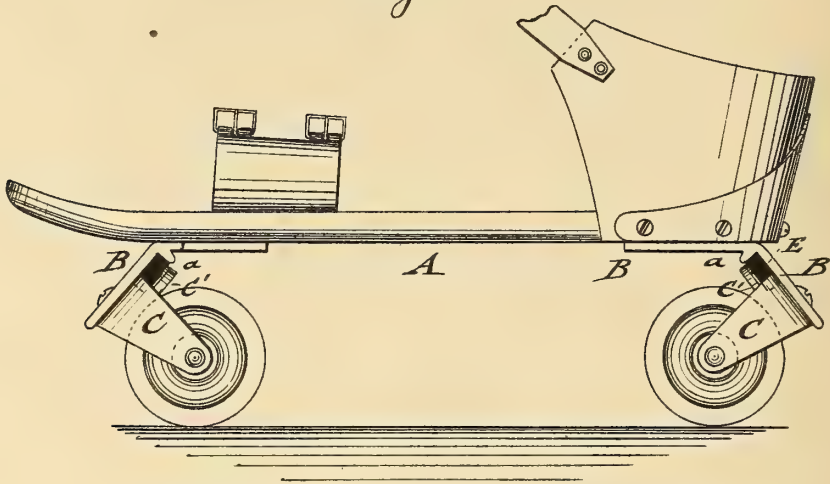


Fig 3.

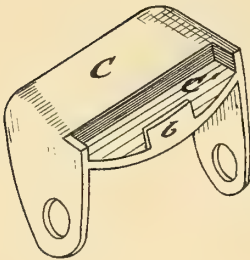


Fig 4.

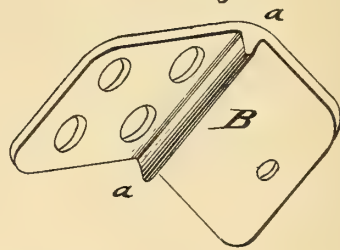
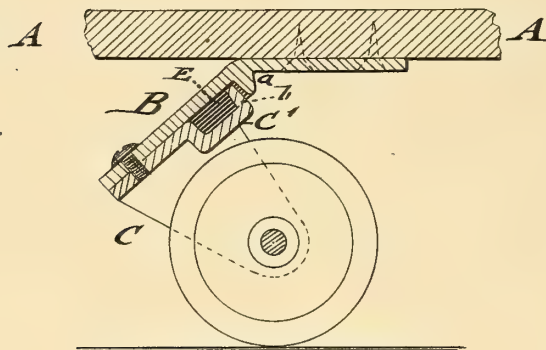


Fig 2.



WITNESSES:

Carl Karp
Otto Pisch

INVENTOR

William A. Sutton
BY *Paul Goppel*

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM A. SUTTON, OF NEW YORK, N. Y.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 249,556, dated November 15, 1881.

Application filed March 3, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. SUTTON, of the city, county, and State of New York, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

This invention has reference to an improved construction of parlor-skates by which the roller-frames are cushioned in a simple manner at the inclined parts of their bracket-plates, so as to be returned to the center by the action of the cushion whenever the side pressure is discontinued.

The invention consists of a skate provided with bracket-plates, to the inclined parts of which the roller-supporting frame is pivoted. Between a transverse lip of each bracket-plate and a central lip of the step-shaped front portion of the roller-supporting frame is interposed a rubber cushion, which returns the rollers into line with the axis of the skate when there is no side pressure exerted thereon.

In the accompanying drawings, Figure 1 represents a side elevation of my improved parlor-skate. Fig. 2 is a detail vertical longitudinal section of the same; and Figs. 3 and 4 are perspective views, respectively, of the roller-supporting frame and bracket-plate.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the sole-plate of my improved parlor-skate, which is made of wood or other suitable material.

To the under side of the sole-plate A are attached, near the front end and at the rear end, angular bracket-plates B B, to the downwardly-inclined portions of which the roller-supporting frames C C are centrally pivoted. Each frame C carries two rollers, which turn loosely on a transverse connecting-shaft of the frame C, and which are separated by an intermediate washer, in the usual manner. At the apex of the angle formed by the horizontal and downwardly-inclined portions of each bracket-plate is arranged a transverse lip, *a*, which projects at right angles, or nearly so, to the inclined portion of the bracket-plate, and which serves, in connection with a step-shaped front portion, C', of the roller-supporting frame C, to support a rubber cushion, E. The inner edge of the roller-supporting frames C C is made arc-

shaped, and provided at the central part with an upward-projecting lip, *b*, that engages the middle portion of the rubber cushion E. The center lip, *b*, serves for centralizing the rollers when there is no pressure on them, while the arc-shaped front edge admits the ready turning of the roller-frames on their pivots. The cushioning rubber plate E is firmly retained by the transverse lip *a* of the bracket-plate, the stepped portion C' of the rubber-supporting frame, and the central lip, *b*, of the same, these parts forming a kind of box, within which the rubber cushion is inclosed, so that it cannot play loose or get detached therefrom.

If necessary, a new rubber cushion may be put in at any time by simply detaching the roller-supporting frame from the bracket-plate by unloosening the screw-pivot and replacing the roller-frame when the new cushion is put in. As each part of the skate, the bracket-plates with their lips, the step-shaped roller-supporting frames with the central lip, are cast and finished separately, they are readily assembled on the sole-plate and form a yielding, durable, and reliably-working roller-skate for general use.

It will be seen from the above description that the transverse part of the roller-bearing frame C is in contact with the lower side of the inclined part of the bracket B, thus affording a firm and positive bearing of the said frame and preventing wobbling thereof when the skate is in use.

It will also be seen that in addition to the advantages above stated I locate the rubber cushion well back of the pivot which connects the roller-frame to the bracket, thus affording a long leverage, which enables me to use a small block of rubber in the pocket C', which, it will be seen by reference to Figs. 1, 2, and 3, is below the plane of the top side of the roller-frame.

I am aware that it is not new to interpose pieces of india-rubber between the roller-frame or caster and an inclined bracket to which said frame or caster is pivoted, and therefore I do not claim this feature when broadly considered.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. For a roller-skate wherein an india-rubber block is used between the roller-frame and

bracket, the angular bracket B, constructed with the transverse lip *a*, located at the angle formed by the horizontal and downwardly-inclined portions of said bracket, substantially

5 as described.

2. For a roller-skate wherein an india-rubber block is used between the roller-frame and bracket, the frame C, constructed with the transverse elongated depressed pocket C' and

10 the retaining-lip *b*, substantially as described.

3. The angular bracket B, constructed with the lip *a*, and the roller-bearing frame C, constructed with the depressed pocket C' and

15 with the rubber cushion, substantially as described.

4. For a roller-skate, the bracket B, constructed with the transverse lip or shoulder *a*, in combination with the roller-frame C, bearing directly against the inclined portion of said bracket and pivoted thereto, and having a rubber cushion located in rear of the axis of the pivot, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence 25 of two witnesses, this 26th day of February, 1881.

WILLIAM A. SUTTON.

Witnesses:

PAUL GOEPEL,
CARL KARP.

(No Model.)

H. M. YATES.

ROLLER SKATE.

No. 250,319.

Patented Nov. 29, 1881.

Fig. 1.

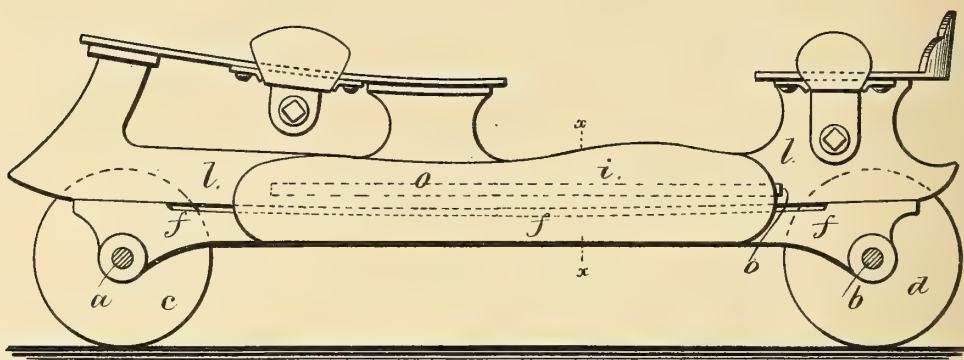
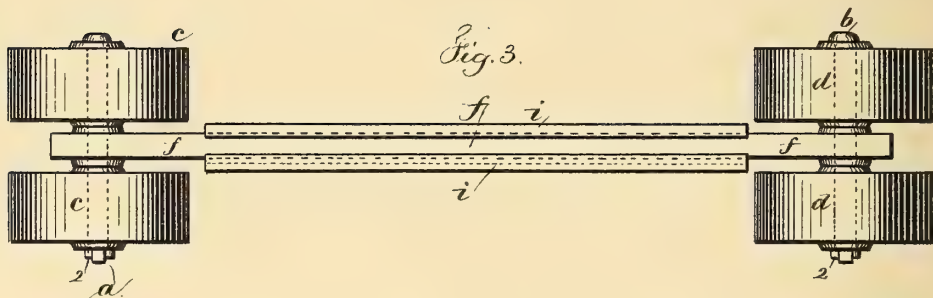


Fig. 2.



Fig. 3.



Witnesses

Charles H. Smith
Harold Ferrell
J. Hail

Inventor

Henry M. Yates
per Lemuel W. Ferrell

UNITED STATES PATENT OFFICE.

HENRY M. YATES, OF NEWARK, NEW JERSEY, ASSIGNOR TO WILLIAM E. GOODENOUGH AND L. A. GOODENOUGH, BOTH OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 250,319, dated November 29, 1881.

Application filed April 20, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. YATES, of Newark, in the county of Essex and State of New Jersey, have invented an Improvement in Roller-Skates, of which the following is a specification.

Roller-skates have been made by attaching to the runners of ordinary skates frames carrying rollers, and these have been clamped by screws, so as to be removable.

My invention is for insuring more firm connection between the frame and the skate-runner by combining with the front and back pairs of rollers a bar that extends from the front to the back pair of rollers, and in which is a groove for the skate-runner, which is secured by a clamping mechanism, such as a key driven in between the runner and the bar.

In the drawings, Figure 1 is a side view of the roller-carriage as attached to a skate-runner, two of the rollers being removed for showing the frame. Fig. 2 is a transverse section at the line *x x*, and Fig. 3 is a plan view.

The axles *a* and *b* are adapted to receive the rollers *c c* and *d d*, and these are secured by pins or keys 2 2 passing through the axles. The frame *f*, that connects the axles *a* and *b*, is provided with flanges *i i*, that extend up at each side of skate-runner *l*, forming a groove that is of a size adapted to receive such runner, and the groove is to be widest at the bottom, so that the frame is adapted to slip end-

wise upon the skate-runner; and *o* is a key or equivalent clamping device for holding the carriage in place upon the skate-runner.

The runners of skates are usually the widest at bottom; hence the frame will be held more securely by the clamping device if the groove is the same shape as the runner, and the carriage will not drop off the runner if the clamping device becomes slightly loose.

I prefer to use keys to clamp the runner to the skate, such keys being introduced into longitudinal grooves in the inner faces of the flanges *i i*.

I claim as my invention—

1. The combination, in a removable roller-skate carriage, of front and back pairs of rollers and axles, a grooved bar connecting the axles and adapted to receive the ordinary skate-runner, and means for clamping the bar to the runner, substantially as set forth.

2. In a removable roller-skate carriage, a grooved bar connecting the front and back axles, the groove being widest at the bottom, in combination with a key to secure the bar to the runner, substantially as specified.

Signed by me this 16th day of April, A. D. 1881.

HENRY M. YATES.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.

(Model.)

H. L. TRUE.

ROLLER SKATE.

No. 251,321.

Patented Dec. 20, 1881.

Fig. 1.

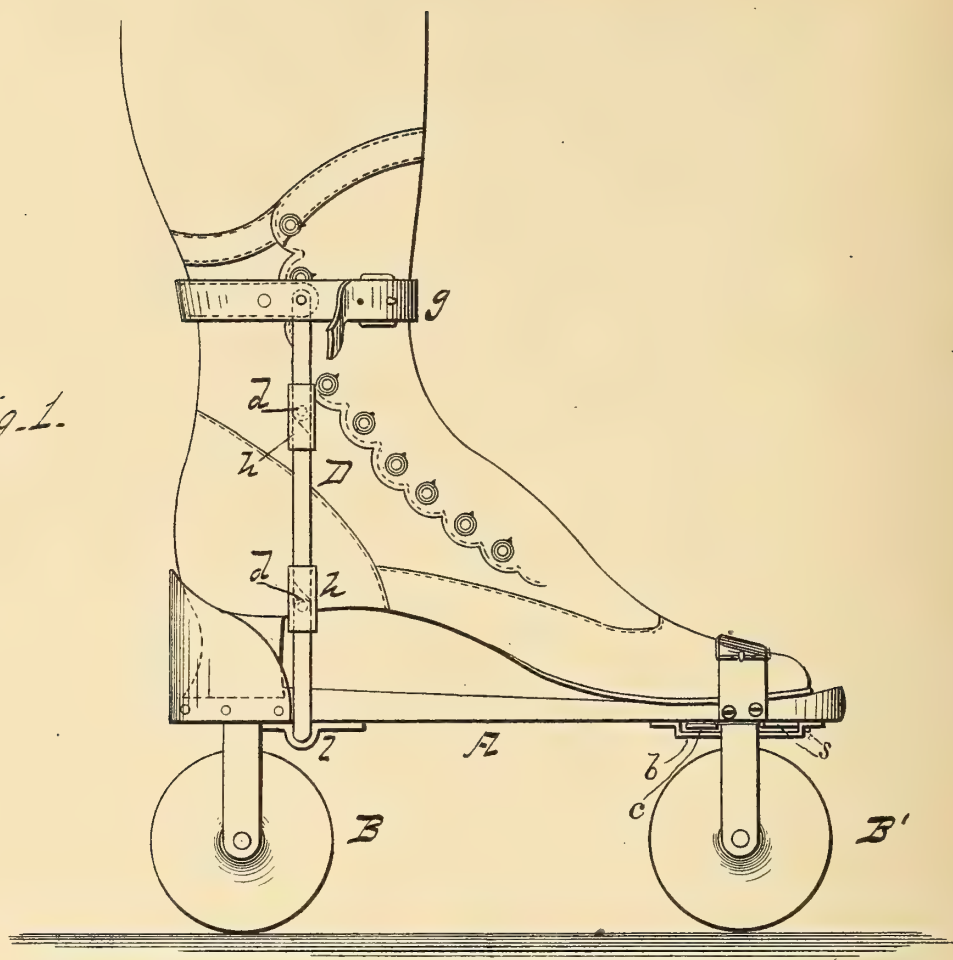


Fig. 2.

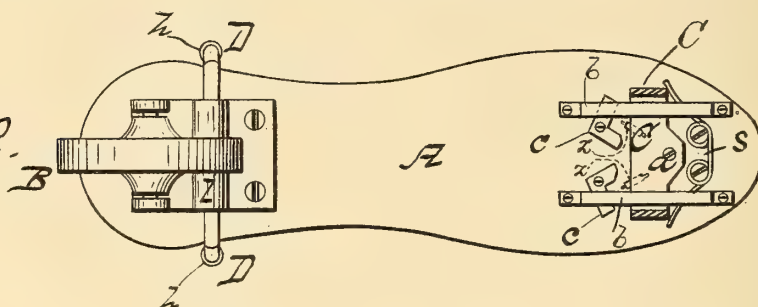


Fig. 3.

WITNESSES

E. H. Bate
James J. Sheehy

INVENTOR

Hiram L. True
by Anderson & Smith
ATTORNEYS

UNITED STATES PATENT OFFICE.

HIRAM L. TRUE, OF McCONNELSVILLE, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 251,321, dated December 20, 1881.

Application filed May 21, 1881. (Model.)

To all whom it may concern:

Be it known that I, HIRAM L. TRUE, a citizen of the United States, resident of McConnelsville, in the county of Morgan and State of Ohio, have invented a new and valuable Improvement in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my device. Fig. 2 is a bottom view, and Fig. 3 is a detail view.

This invention has relation to roller-skates; and it consists in the improved features of construction and combination hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, the letter A designates the skate-stock, which may be of wood or metal and in any ordinary form.

B B' indicate the front and rear rollers, which may be single or double, as desired. The front roller or both rollers may be provided with a half caster-frame, C, which is pivoted in front, so as to have a lateral movement on the pivot *a* connecting it with the skate-stock when the foot is turned, thereby enabling the skater to make short turns and to move more easily on the outside edge. Guides or stops *b* serve to prevent the roller-frame from vibrating too far to either side, and stops or fastenings *c*, preferably of angular form, are provided at each side of the stock, to prevent, when desired, the vibration of the roller-frame entirely, or to allow it to vibrate only toward one side. These stops can be readily adjusted by the skater upon raising the foot. Sometimes, in addition to front and rear laterally-vibrating rollers, I may employ a central roller of larger diameter, and by using the ankle-braces there will be sufficient support.

D D indicate the ankle-braces, which are pivoted through or to the stock on its upper side or bottom, as may best suit the size and character of the rollers employed. These ankle-braces are designed to drop about the ankle, being especially designed for the convenience and protection of ladies in their application or removal. As usually constructed these drop-braces are made with two or more joints, as indicated at *d d*, or otherwise, to provide a

falling portion, *e*, so that the leg-strap *g* can be fastened or unfastened near the foot.

In order to give the braces proper firmness when in position, the slides, thimbles, or joint-holders *h* are applied to said braces near the joints, and in such relation thereto that they can be readily made to engage therewith, and can be as easily disengaged when it is desired to let the braces drop. The braces and stock are pivoted together, as above set forth, so that the skate has free vibratory motion with relation to its braces. Usually it is designed to secure the braces to the stock by means of bearings *l*, which can readily be unfastened to allow the braces to be removed when they are not needed. Sometimes the double-joint braces can be used very conveniently without the thimbles or joint-fastenings; or the joints above the pivoted portion, at the skate-stock, may be dispensed with.

A spring, *s*, is usually arranged to bear on the front caster-frame, and serves to assist in keeping it directed forward.

Under the caster-frame small roller-bearings *z* are usually provided to prevent undue friction.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The removable pivoted and falling or dropping ankle braces *D*, in combination with the skate-stock pivoted to the lower ends thereof, substantially as specified.

2. In a skate, the half caster-roller pivoted in front, substantially as specified.

3. In a skate, the half caster-roller pivoted in front, and the lateral guides or stops *b*, to prevent the roller from vibrating too far to either side, substantially as specified.

4. In a skate, the half caster-roller pivoted in front, and the stops or fastenings *c*, to prevent the vibration of the roller-frame entirely or to either side, substantially as specified.

5. In a skate, the half caster-roller having anti-friction bearings *z* and a directing-spring, *s*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HIRAM L. TRUE.

Witnesses:

WILLIAM B. CREW,
BENJAMIN F. MATSON.

(No Model.)

O. R. LUTHER.

ROLLER SKATE.

No. 252,484.

Patented Jan. 17, 1882.

fig. 1.

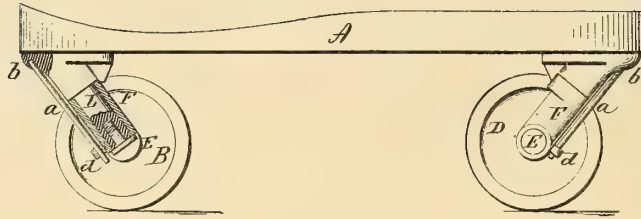


fig. 3

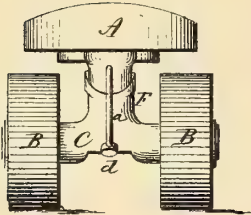


fig. 4

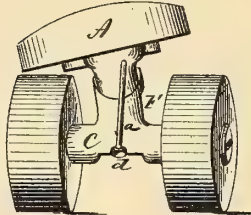


fig. 5

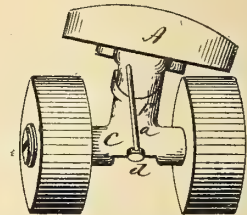


fig. 2



fig. 6



Witnesses

J. H. Chumley
L. D. Rogers.

Ormel R. Luther
By Atty. Inventor.

Wm. E. F. F.

UNITED STATES PATENT OFFICE.

ORMEL R. LUTHER, OF TORRINGTON, CONNECTICUT.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 252,484, dated January 17, 1882.

Application filed September 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, ORMEL R. LUTHER, of Torrington, in the county of Litchfield and State of Connecticut, have invented a new Improvement in Roller-Skates; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a sectional side view; Fig. 2, a bottom view, looking upward; Fig. 3, an end view in its position of rest or straight-forward travel; Fig. 4, a forward end view as turning to the right; Fig. 5, a forward end view as turning to the left; Fig. 6, a transverse section, showing the stops.

This invention relates to an improvement in that class of skates which are constructed for use on floors or prepared surfaces, and such as are fitted with roller-like wheels and commonly called "roller-skates."

The object of this invention is to construct the skates so that the axles will readily turn by the movement of the skater into a position at right angles to the path being traveled—that is to say, parallel with each other when going directly forward, or radial to the curve being made by the skater.

The invention consists, essentially, in arranging the axles of the wheels upon a pivot on the foot-piece in the plane of the vertical central line of the foot, but inclined to the horizontal plane of the foot at an angle of about forty-five degrees, combined with a spring between the wheels, arranged to permit the axle to be turned to the right or left, according to the curve being made, but return the axle to its normal position at right angles to the line of the foot, as more fully hereinafter described.

A represents the foot-piece, which is of substantially the usual construction; B B, the forward wheels, arranged upon an axle, C; D D, the rear wheels, arranged upon an axle, E. On the axles centrally and between the wheels a socket, F, is formed, which works on a pivot, L, attached to the foot-piece, the said pivots rigidly secured to the foot-piece and standing in the plane of the vertical central line of the foot, but inclined inward to the horizontal plane of

the foot at an angle of about forty-five degrees, as seen in Fig. 1. Because of the inclination of the pivots L, if the foot-piece be tipped to one side—say the right, as in Fig. 4—the axles will be correspondingly turned, as indicated in broken lines, Fig. 2, for the reason that the pivot will be inclined corresponding to the foot-piece; but the axle in the wheels must retain its position parallel with the floor, hence will turn upon the pivot until the vertical plane of the pivot is at right angles to the axial line of the axles; and, as seen in Fig. 2, the rear wheels turn correspondingly in the opposite direction, as also seen in Fig. 2, the axial line of both axles radiating from the center of the curve, which will be readily followed by the skate. If tipped in the opposite direction, as seen in Fig. 5, then the axles will be turned in the opposite direction. The skater naturally leans inward on any curve which he is turning or attempting to turn. This inward inclination of his body correspondingly turns his foot, and in said turning the wheels assume the before-mentioned radial position to that curve. In ordinary skating the stroke of each foot is made in curves in opposite directions, that of the right foot going outward to the right, and that of the left foot outward to the left, the body and foot naturally inclining toward the curve being made. This automatic yielding or turning of the axles to accommodate themselves to those curves make it easy and natural for the skater to move, there being no more resistance, so far as the skate itself is concerned, than in making the same stroke with the common skate. As the natural or normal position of the axles should be at right angles to the central line of the foot, I arrange a metal rod, *a*, parallel with each pivot, rigidly attached by one end, as at *b*, to the shank of the pivot, the other end attached to the axle outside the pivot, as at *d*. This rod *a* is of tempered steel or other elastic material, which will yield to the turning of the axles in either direction, as indicated in Figs. 4 and 5, or, when free, will return to its normal position, as seen in Fig. 3, bringing the axles back to their parallel or normal position. The strength of the springs should be sufficient to hold them in that position, but readily yield to the natural inclination of the foot upon the foot-piece,

To prevent the axles from turning too far, or so as to set or break the spring, I provide stops *e* on the socket, which will strike against a lug, *f*, on the shank of the pivot or other part of the foot-piece when the wheels have been turned, this limit being sufficient for all practical purposes. One axle thus arranged will accomplish a very good purpose, the other being stationary, because the turning of the forward axle will tip the rear axle onto the inside wheel; or a single wheel may be used at one end and my improved arrangement at the other; but I prefer to arrange both axles in the manner described, as the same tipping of the foot will greatly reduce the radius of the curve made over what it will be with a single pivoted axle. I therefore do not wish to be understood as limiting my invention to the pivoting of both axles; but.

What I do claim is—

1. In a roller-skate, the axle of one or both pairs of wheels arranged upon a pivot on the foot-piece in the plane of the vertical central

line of the foot-piece, but inclined to the horizontal plane of the foot at an angle of about forty-five degrees, combined with a spring-rod, *a*, parallel with the pivot, one end rigidly attached to the foot-piece, the other engaged with the axle, substantially as and for the purpose described.

2. In a roller-skate, the axle of one or both pairs of wheels arranged upon a pivot on the foot-piece in the plane of the vertical central line of the foot-piece, but inclined to the horizontal plane of the foot at an angle of about forty-five degrees, combined with a spring-rod, *a*, parallel with the pivot, one end rigidly attached to the foot-piece, the other engaged with the axle, and stops to limit the extent of turning of the axle or strain upon said spring, substantially as described.

ORMEL R. LUTHER.

Witnesses:

LEWIS HULL,
FRANK W. BUTLER.

(No Model.)

G. B. PRICE & G. W. SMITH.

ROLLER SKATE.

No. 252,970.

Patented Jan. 31, 1882.

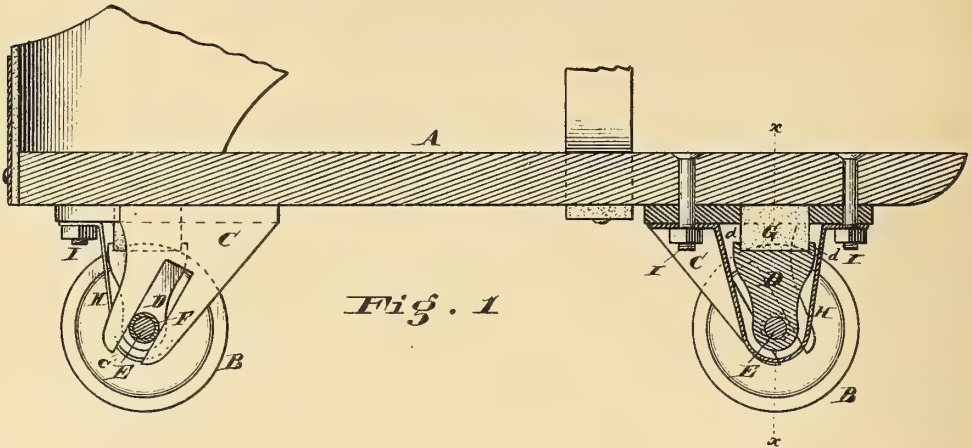


Fig. 1

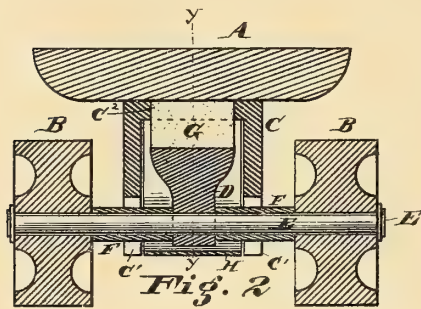


Fig. 2

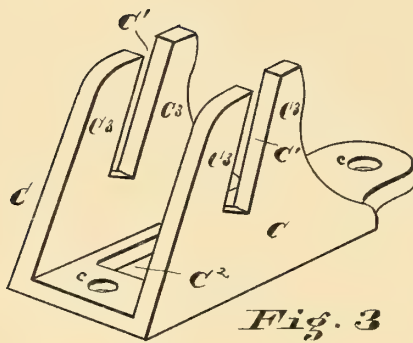


Fig. 3

Attests
L. J. Matos.
[Signature]

Inventors
George B. Price
George W. Smith
By Their atty.
[Signature]

UNITED STATES PATENT OFFICE.

GEORGE B. PRICE AND GEORGE W. SMITH, OF PHILADELPHIA, PA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 252,970, dated January 31, 1882.

Application filed November 10, 1881. (No model.)

To all whom it may concern:

Be it known that we, GEORGE B. PRICE and GEORGE W. SMITH, both of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Roller-Skates, of which the following is a specification.

Our invention has reference to roller-skates; and it consists in providing the frame with two plates, having downwardly-projecting sides, furnished with oblique slots, the slots at each end of the skate having their obliquity in opposite directions; further, in securing to an axle carrying on its ends the rollers a cast-iron or other metallic hub, which rests upon an elastic cushion or spring located between said hub and skate; further, in locating said axle in the slots, so that it may be guided therein, to the end that by pressing on one side of the skate-frame the rollers on one side of said frame will converge, as would be required, to turn a corner or make a curve; and, finally, in minor details of construction, all of which are fully set out in the following specification, and shown in the accompanying drawings, which form part thereof.

Heretofore roller-skates have been made with the axle pivoted to an oblique surface, and provided with springs to give the springing action; but this construction is both expensive and liable to get out of order. The state of the art is further shown in the patent to Leggo and Ireland, No. 191,350, and English Patents Nos. 3,318 and 2,226 of 1876, and 1,507 of 1876, and 3,948 of 1875.

By our improved construction the skate is stronger and more durable, is as sensitive in its action, and is much cheaper in its construction.

In the drawings, Figure 1 is a longitudinal sectional elevation on line *yy* of a roller-skate embodying in it our improvements. Fig. 2 is a cross-section of same on line *xx*; and Fig. 3 is a perspective view of one of the slotted plates.

A is the frame of the skate, and may be made of wood or other material, as metal.

C are metallic plates secured to the frame A by bolts I, or cast solid with it. These

plates C are provided on each side with projections C³, which are furnished with oblique slots C', parallel to each other, but at about an angle of sixty degrees with the base of the plate. These plates are provided on the bases with apertures C², to receive the springs of rubber G or other material.

The axle E is made of a rod of uniform diameter, secured in the middle to the hub D, which rests upon the spring-rubber G, as shown, and has lugs *d*, to prevent its slipping off the rubber. The rollers B are loose upon each end of the axle E, and are kept from moving toward the hub by sections of brass or other pipe F, which inclose the rod E, and the rollers cannot come off the axle, as they are riveted on over a washer, as shown. These axles and rollers are prevented from coming off and out of the slots C' by a band, H, which is held in place by bolts L. These devices are located one at each end of the skate, and in opposite directions, or having their slots pointing toward the middle and at an angle of about sixty degrees.

We do not limit ourselves to the particular kind of axle shown, as any other might be substituted therefor.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination of the frame A, carrying the parallel plates or projections C³, provided with parallel oblique slots C', open on the bottom, spring G, perpendicularly arranged above the axle, hub D, axle E, loose sleeves F, and wheels or rollers B, substantially as and for the purpose specified.

2. In a roller-skate, the plate C, having projections C³, arranged parallel to each other, and provided with parallel slots C', arranged obliquely thereon and open on the bottom, said plate being further provided with an aperture, C², to support the rubber-spring cushion, substantially as shown.

3. In a roller-skate, the combination of the frame A, plates C, having projections C³, furnished with oblique parallel slots C', open on the bottom, spring G, hub D, axle E, rollers

B, and band H, substantially as and for the purpose specified.

4. In a roller-skate, the combination of the frame A, plates C, having projections C³, furnished with oblique parallel slots C', open on the bottom, springs G, hub D, axle E, loose sleeves F, rollers B, and band H, substantially as and for the purpose specified.

In testimony of which invention we hereunto set our hands.

GEORGE B. PRICE.
GEO. W. SMITH.

Witnesses:

R. M. HUNTER,
JOHN W. STEWARD.

(No Model.)

C. E. MARSHALL.

ROLLER SKATE.

No. 253,735.

Patented Feb. 14, 1882.

Fig. 1.

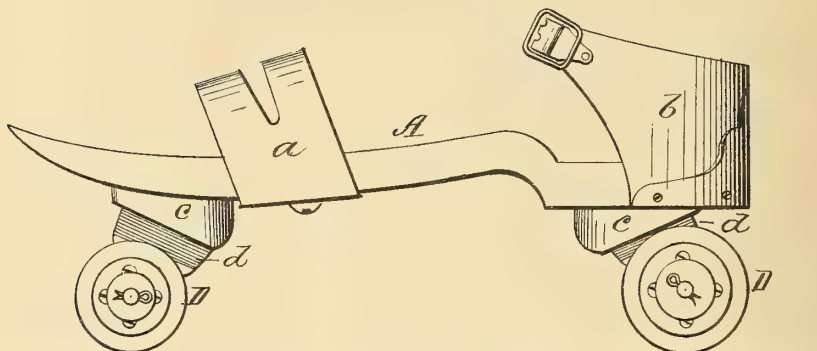


Fig. 2.

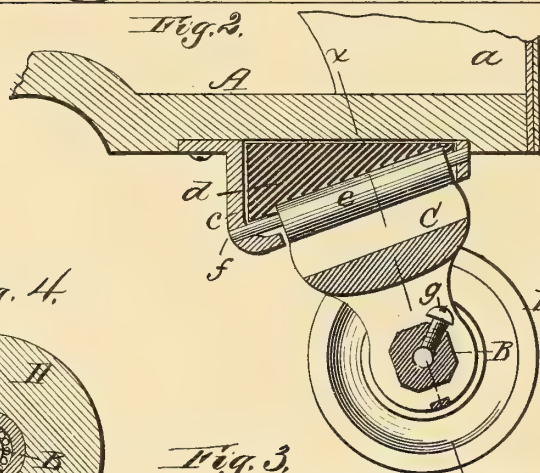


Fig. 4.

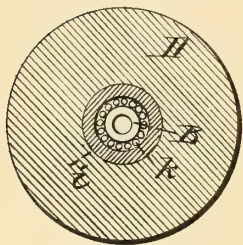
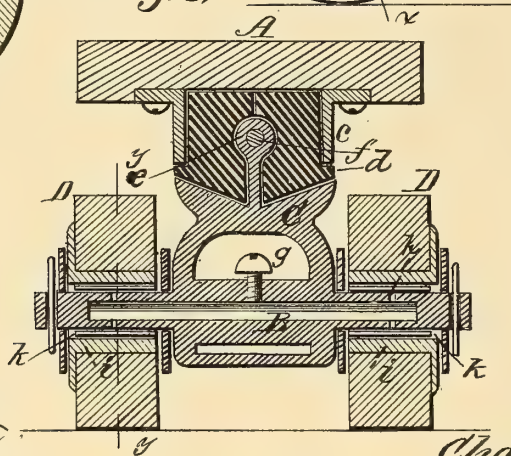


Fig. 3.



Witnesses:
A. C. Dr. Arthur
S. L. Miller

Inventor.

Charles E. Marshall.

per. Cha. H. Fowler
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES E. MARSHALL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND GEORGE N. PARKER, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 253,735, dated February 14, 1882.

Application filed August 9, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. MARSHALL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side elevation of my invention. Fig. 2 is a longitudinal central section taken through the heel of the skate. Fig. 3 is a cross-section taken on line *xx* of Fig. 2. Fig. 4 is a section of one of the rollers and its connections, taken on line *yy* of Fig. 3.

The present invention has relation to certain new and useful improvements in that class of skates known as "roller" or "parlor" skates; and the object thereof is to generally improve the construction of the skate, so that it will be strong, durable, and light to the feet of the wearer, and to render the rollers and axles self-lubricating, whereby they will work with much greater ease and comfort to the person wearing them. These several objects I attain by the construction, substantially as shown in the drawings and hereinafter described.

In the accompanying drawings, A represents the sole-plate, formed by molding or pressing it out of paper-pulp, and has connected thereto the usual fastenings, *a b*, for securing it to the foot of the wearer.

To the heel and toe of the sole-plate A are secured metallic boxes *c*, for containing rubber or other elastic cushions *d*. To these boxes *c* are hinged or pivoted the hollow axles B, each axle being formed with a frame or seat, C, for the lower end of the cushions *d*, said seat being inclined in opposite directions, so as to secure the entire elasticity of the cushions when the skater is turning a curve, and insuring the cushion being retained in place.

The seats C are each formed with an eye, *e*, through which passes a pin, *f*, the ends of the pin entering the sides of the boxes *c*, thereby securely connecting the axle B to the boxes, and enabling the sole-plate A to have the required rocking motion. The axles B are made

hollow to receive oil or other lubricant, the same being introduced through an opening which is closed by a screw, *g*, on a suitable plug. The lubricant works out through small holes *h*, near the ends of the axle, and onto the outer periphery of the same, thereby automatically lubricating itself.

The rollers D, like the sole-plate A, are formed from paper-pulp, the object thereof being to make the skate as light as possible to the feet of the wearer, thereby enabling the person to skate with less exertion and much longer without tiring. A skate with paper sole-plate and rollers increases its lightness to such a degree as to render the skate especially adapted to ladies and children. The rollers D are provided with metallic bushings *i*, and between these bushings and axles are a series of round bars, *k*, encircling the same, as shown in Fig. 4, thereby insuring the easy running of the rollers D with comparatively little friction.

The sole-plate A, I prefer to make of the form shown, a concave or curve in the sole and toe portion and the surface of the heel portion on a line below the lowest part of the surface of the sole, as illustrated in Fig. 1, this being considered the most comfortable and easy shape for the sole-plate to the skater.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A skate provided with a sole-plate composed of paper, substantially as and for the purpose set forth.

2. In a roller or parlor skate, the combination, with the usual sole-plate and axles thereof, of suitable rollers composed of paper, substantially as and for the purpose specified.

3. As an improved article of manufacture, a roller for parlor-skates, composed of paper, substantially as and for the purpose described.

4. In a roller or parlor skate, the axle B, cast with seats C inclined in opposite directions, as shown, and a central eye, *e*, in combination with the elastic cushions *d*, disposed upon each side of the eye *e*, the latter being pivoted to the box *c* by pin *f*, substantially as and for the purpose set forth.

5. In a roller or parlor skate, the combina-

tion, with the axle B and roller D, having the
metal bushing *i*, of the round bars *k*, loosely
retained around the axle and between it and
the bushing by suitable disks or plates con-
5 nected to the axle upon the inner and outer
sides of the roller, substantially as and for the
purpose specified.

In testimony that I claim the above I have
hereunto subscribed my name in the presence
of two witnesses.

CHARLES E. MARSHALL.

Witnesses:

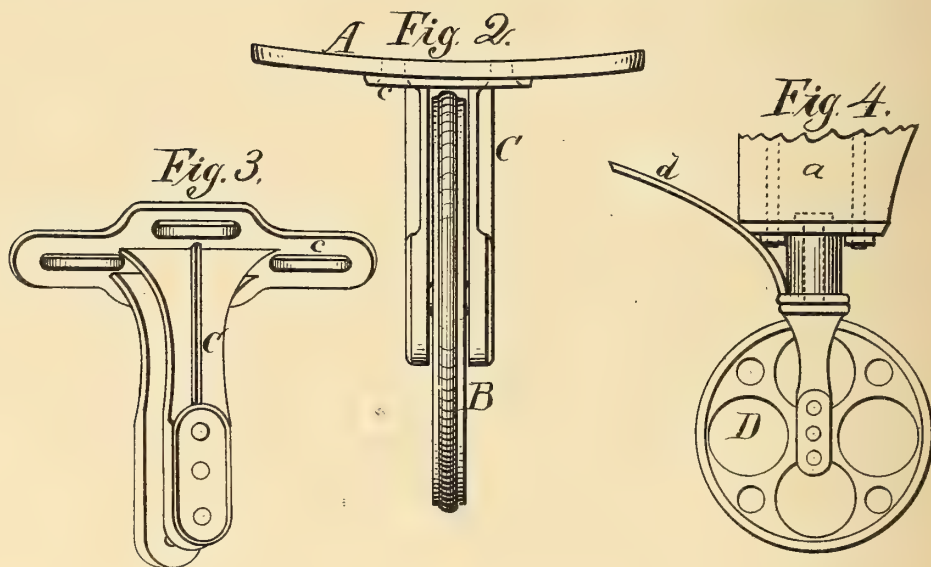
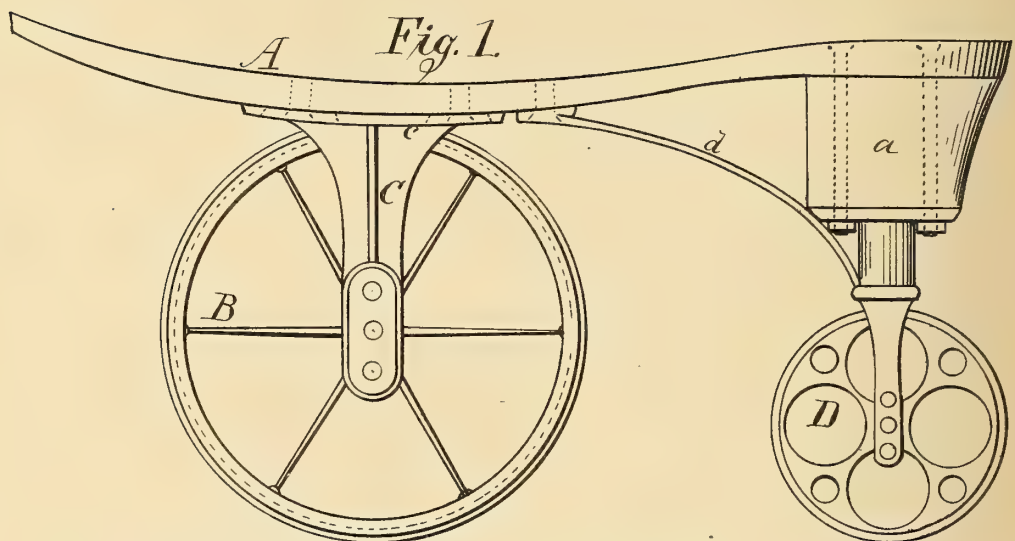
JOHN G. MILLER,
N. A. THOMPSON.

(No Model.)

H. TAPPER.
ROLLER SKATE.

No. 253,784.

Patented Feb. 14, 1882.



Witness,
A. Williams
F. W. Cadwall

Inventor,
Henry Tapper,
By Geo. W. Sibbitt, Att.

UNITED STATES PATENT OFFICE.

HENRY TAPPER, OF CLEVELAND, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 253,784, dated February 14, 1882.

Application filed December 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY TAPPER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Roller-Skate, of which the following is a specification.

The nature and objects of this invention will fully appear from the subjoined description, when considered in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of my improved roller-skate. Fig. 2 is a front end elevation. Fig. 3 is an under side view of the front wheel bracket.

The principle of the construction of my invention is the employment of one main or propelling wheel, located under the central part of the ball of the foot of the wearer, in the line of the center of gravity of the body, and of a second or rear wheel or caster underneath the heel, both of said wheels being in line under the central part of the foot, the rear wheel or caster arranged so as to follow the main or propelling wheel in all of its movements in forward or curved lines performed by the skater. The principal object of the rear wheel or caster is to enable the wearer to preserve his equilibrium.

The construction of my improved roller-skate is substantially as follows:

A is the sole or foot plate, which may be made in the usual form, of wood or iron, as may be desired, with heel-piece *a*.

B is the main wheel, journaled in a suitable adjustable bracket, C, secured to the under side of the sole A. This wheel I make from about four to eight inches in diameter, or such

size as may be deemed advisable, the object being to attain greater speed. It may be made of iron or wood, with spokes or open-work web, in order to be as light weight as possible. If made of iron, the rim of felly may be made with a groove in its periphery and have a rubber tire, which would render it noiseless and less liable to slip on the floor, and also have greater traction on the floor. The plate or flange *c* of the bracket C has slots for the screws which secure it to the sole A, for the purpose of enabling it to be adjusted back or forward to suit the feet of the wearer.

D is the rear or supporting wheel or caster, arranged in a post or bracket attached to the bottom of the heel *a* by means of bolts or otherwise, and is supported by a brace, *d*. This wheel D may be permanently fixed in the yoke at the lower end of the post, or it may be swiveled, so as to turn and follow the forward wheel in curved movements; but as a general rule the skater will run only on the forward or main wheel, raising the heel slightly from the floor.

The rear wheel, D, like the forward wheel, B, may be made of either wood or iron.

Having described my invention, I claim—

In roller-skates, the main or propelling wheel B, pivoted in bracket C and adjustably fixed under the sole A, and the rear wheel or caster, D, fixed in post and brace *d* to the bottom of heel *a*, all constructed to operate substantially as specified.

HENRY TAPPER.

Witnesses:

GEO. W. TIBBITTS,
M. G. NORTON.

(Model.)

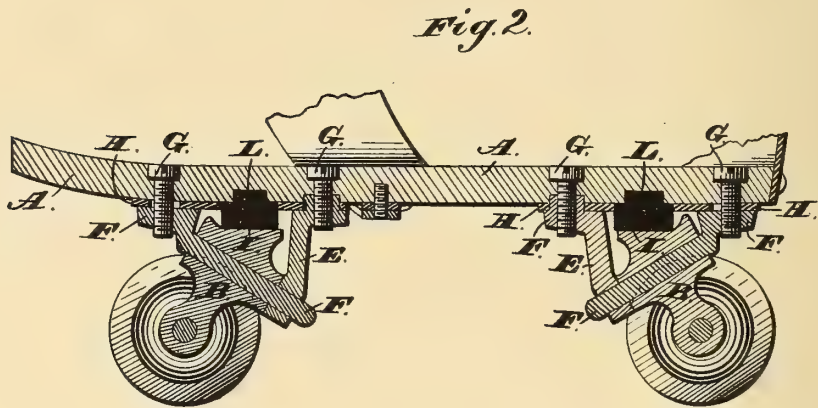
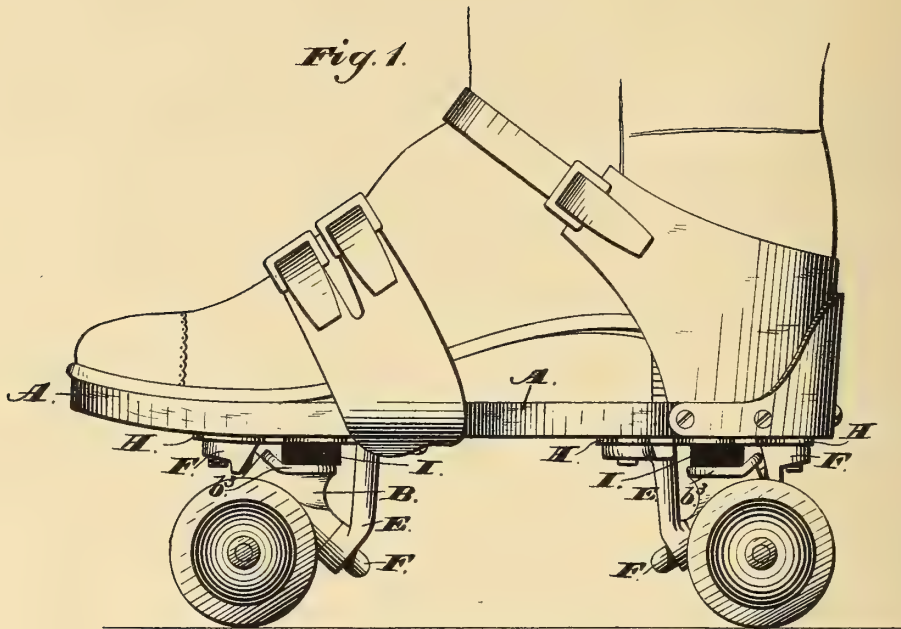
2 Sheets—Sheet 1.

S. WINSLOW.

ROLLER SKATE.

No. 255,065.

Patented Mar. 14, 1882.



Witnesses:

Jas. E. Hutchinson.

J. A. Rutherford

Inventor:

Sam'l Winslow,

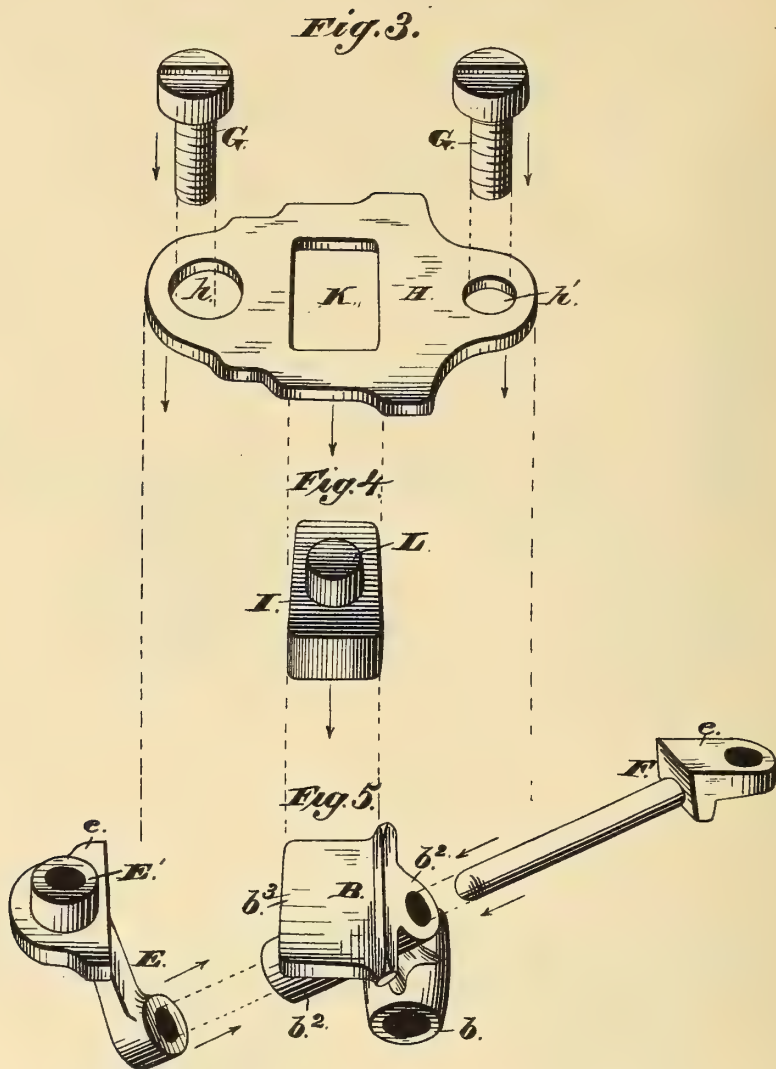
By his Attorney,

James L. Norris.

S. WINSLOW
ROLLER SKATE.

No. 255,065.

Patented Mar. 14, 1882.



Witnesses:
Jas. E. Hutchinson.
J. A. Rutherford.

Inventor.
Sam'l Winslow,
By his Attorney,
James L. Norris.

UNITED STATES PATENT OFFICE.

SAMUEL WINSLOW, OF WORCESTER, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 255,065, dated March 14, 1882.

Application filed January 25, 1882. (Model.)

To all whom it may concern:

Be it known that I, SAMUEL WINSLOW, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

This invention relates to an improvement upon the roller-skate secured to me by Letters Patent of the United States, bearing date April 26, 1881, and numbered 240,800.

In my present skate the foot-piece has a side-wise-rocking motion, and is provided with two pairs of rollers front and rear, and the roller-carrier is swiveled upon an inclined pin that is supported at its lower forward end in a bracket or hanger, and held at its upper end by a bracket or hanger, as shown in my former patent. In said patent, however, the plate from which the hanger depends is secured directly against the under side of the foot-piece, while a separate plate or bracket, which holds the upper end of the inclined pin, is also secured directly to the bottom of the foot-piece.

Under my present invention, in lieu of securing these plates directly against the bottom side of the foot-piece, I interpose between the foot-piece and the top faces of the two plates a single metal plate which is formed at one end with a perforation for one of the fasteningscrews, and at the opposite end of this plate I form a somewhat larger perforation for receiving a boss upon the plate that is provided with the long hanger, the fastening screw in this instance passing through the foot-piece and entering a screw-threaded socket in the boss.

In my patent above referred to the two plates are formed with notches or recesses for the wedge-shaped elastic block that is held between the under side of the foot-piece and the inclined plate upon the top side of swiveled roller carrier; but in my present invention the single plate that is interposed between the two supports for a swivel-pin and the foot-piece has a central opening for the elastic block, and in the under side of the foot-piece is formed a recess into which a teat upon the elastic block is received.

Under my present construction the two supports for the inclined pin, which are practically

a long and a short bracket or hanger, in lieu of being clamped against the foot-piece, are held against a single metal plate which in effect connects them together, thus giving increased strength and rigidity to the structure; and it will also be found that the rigidity of such connection formed by clamping the hangers or brackets against a firm unyielding body, such as the said intermediate plate, will be more lasting than where they are held in immediate contact with a wooden foot-piece the material of which will by constant pressure be liable to yield to some extent. The elastic block will be more securely held in place by the walls of an opening formed centrally through a plate secured at both ends to the foot-piece, and the said elastic block will also be more securely held against any shifting or lateral displacement by reason of its teat received into a recess formed in the foot-piece of the skate. Finally, the several parts constituting the connection between the roller-axle and the foot-piece can be readily taken apart or put together, as occasion may require.

In the accompanying drawings, Figure 1 is a side elevation of a roller-skate with my improvement applied; Fig. 2, a longitudinal section thereof, taken on a central vertical plane. Fig. 3 represents the screws and the bed-plate that is designed to be secured to the bottom side of the foot-piece. Fig. 4 is a perspective view of the elastic cushion, and Fig. 5 represents in detail the swiveling or rocking roller-carrier, the swivel-pin, and the two hangers or brackets.

A designates the foot-piece, provided with heel and toe straps, as usual.

The rocking roller-carrier B comprises a transverse tubular bearing, *b*, for the roller-axle upon which the rollers are loosely mounted, a longitudinal inclined sleeve, *b*², united by means of a short neck to said tubular bearing and adapted to constitute a bearing for the inclined pin, upon which the roller-carrier rocks, and a horizontal plate or seat, *b*³, that is formed upon the inclined sleeve and adapted to serve as a seat or support for the elastic block.

The front and long bracket or hanger E is formed at its lower end with a socket which receives the lower end of the inclined swivel-

pin, and the rear short bracket, F, is preferably made integral with the upper end of the said pin. These hangers are connected with the foot-piece of the skate by means of screws
 5 G G, that are passed through the foot-piece from its upper side, and between the upper flat faces, *e e*, of these two hangers and the under side of the foot-piece is interposed a single metal bed-plate, H, against which the
 10 two hangers will be clamped and held by the screws. This plate has at one end an opening, *h*, into which is fitted a boss, E', that is formed upon the top side of the long hanger E, the said boss having a screw-threaded bore which
 15 receives the screw. The swivel bracket or hanger F has, however, a plane upper side that fits against the bed-plate, which at this end is formed with a perforation, *h'*, for the remaining fastening-screw, which, passing
 20 through the foot-piece and the bed-plate, enters a screw-threaded hole in the small hanger. I indicates the elastic india-rubber block, which constitutes an elastic support tending to hold the foot-piece erect, but allowing it to
 25 yield to accommodate the movements of the skater's foot. The walls of the rectangular opening K, that is formed through the center of the bed-plate, embrace the sides to the elastic block which is seated upon the seat or
 30 plate on the rocking roller-carrier. The elastic block is provided upon its upper side with a teat or projection, L, and the foot-piece is formed with a screw into which the said teat is fitted. It will thus be seen that, while a
 35 portion of the top side of the elastic block fits against the under side of the foot-piece, its teat is held in a recess in the latter, and that the block is further held by the walls of the opening in the bed-plate. That portion of the bed-
 40 plate above the seat or plate on the rocking roller-casing is made somewhat greater in width than the said plate on the roller-carrier, so that the rocking of the foot-piece too far to either side, and consequently twisting or unnecessary straining of the ankle, will be avoided
 45 by either of the corners *h²* of the plate H striking against the bed-plate. In my former patent the lugs upon the plate that is formed with the sleeve for the inclined pin strike di-

rectly against the foot-piece; but in the present instance the bed-plate receives the shock, and, being of metal, will not become soon worn or indented.

What I claim is—

1. In a roller-skate, the combination, essentially as hereinbefore described, of the foot-piece, two depending front and rear stationary brackets or hangers supporting an inclined pin arranged substantially coincident with a central longitudinal line through the foot-piece,
 55 a roller-support arranged on said pin, a flat metallic plate interposed between the said stationary brackets or hangers and the under side of the foot-piece and constituting a broad plane bearing for the said brackets or hang-
 60 ers, and attaching screws or bolts passing through both the brackets or hangers and the flat plate, for the purposes set forth.

2. In a roller-skate, the metal bed-plate secured to the under side of the foot-piece and interposed between the said foot-piece and the hanger supporting the inclined pin upon which the rocking roller-carrier is mounted, said bed-plate being formed with an opening for an elastic block that is located between the foot-
 70 piece and the rocking roller-carrier, substantially as described.

3. In a roller-skate, the elastic block located between the foot-piece and the rocking roller-carrier, and provided with a teat received in a
 80 recess in the under side of the foot-piece, substantially as described.

4. The combination, in a roller-skate, of the foot-piece with the long and short hangers supporting the inclined pin upon which the
 85 rocking bearing is mounted, and the metal bed-plate H, secured directly to the foot-piece and interposed between the foot-piece and the hangers, said bed-plate being formed at one end with an opening receiving a boss upon
 90 one of the standards, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL WINSLOW.

Witnesses:

ISAAC D. GOULDING,
 SAMUEL WELTY.

J. K. ROSS.
ROLLER SKATE.

No. 255,460.

Patented Mar. 28, 1882.

Fig. 1.

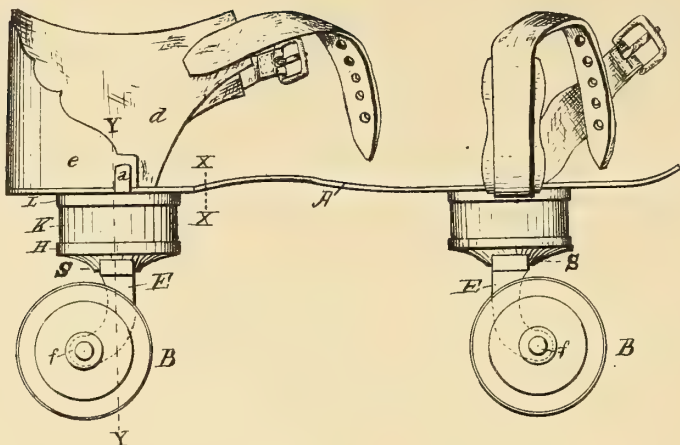


Fig. 2.

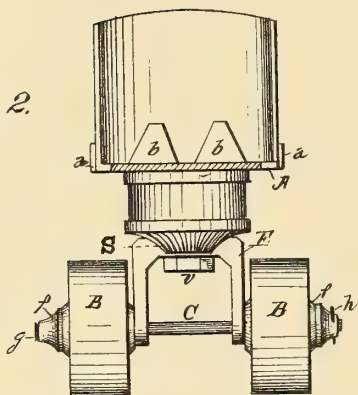


Fig. 3.

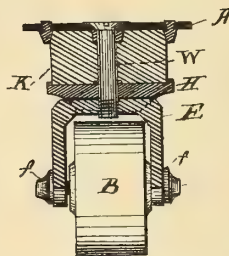


Fig. 4.

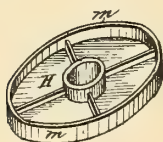


Fig. 5.

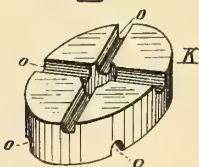


Fig. 6.

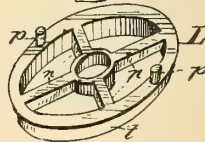
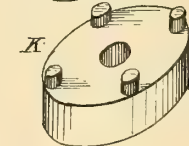
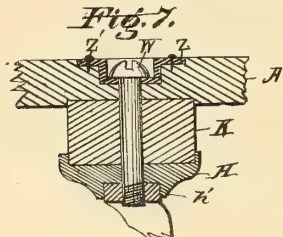


Fig. 7.



Attest:

Wm. Strehli.
W. S. Christopher

Inventor:

James K. Ross,
per Wm. Hubbell Fisher
Atty

(No Model.)

2 Sheets—Sheet 2.

J. K. ROSS.
ROLLER SKATE.

No. 255,460.

Patented Mar. 28, 1882.

Fig. 9.

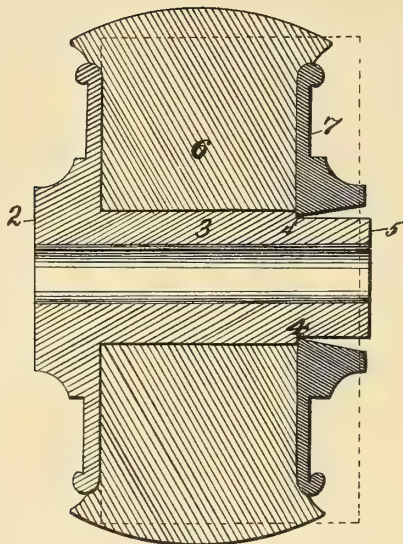
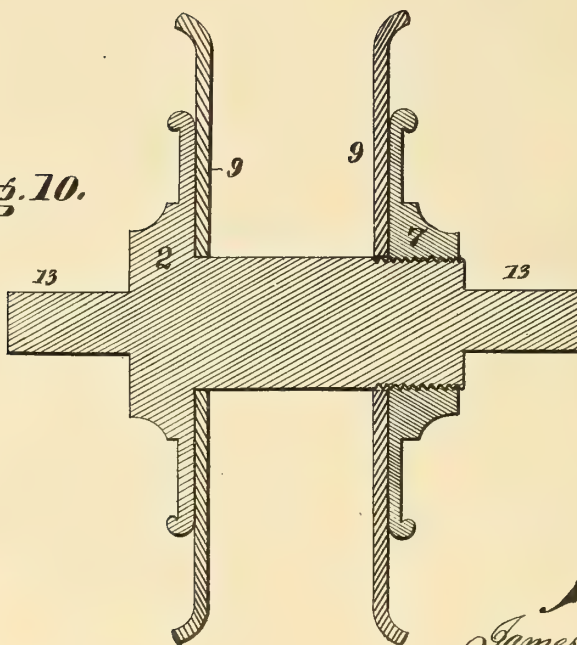


Fig. 10.



Attest:

J. Wm. Strubli.
W. S. Christopher

Inventor:
James K. Ross
per Wm. Hubbell Fisher,
Atty.

UNITED STATES PATENT OFFICE.

JAMES K. ROSS, OF SPRINGFIELD, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 255,460, dated March 28, 1882.

Application filed November 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES K. ROSS, of the town of Springfield, in Clarke county and State of Ohio, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention in general consists of several features: first, in novel means connecting the roller-gear and foot-plate and supporting the latter, rendering the foot-plate resilient under the pressure of the wearer of the skate, enabling the foot-plate to be rocked upon the roller and the roller-gear to be turned at will to a small extent to the right or left—that is to say, so turned that the vertical longitudinal plane of the roller, instead of being parallel to the vertical longitudinal plane of the foot-plate, shall cross said latter plane at an acute angle, and when the skater lifts said skate the roller or rollers shall resume their usual position—viz., wherein the vertical plane of the rollers is parallel to the longitudinal vertical plane of the foot-plate; secondly, in means whereby the skate may be made reversible—that is, may be quickly changed from a four-roller skate into one having three or two rollers; thirdly, in a novel formation of the foot-plate of a skate having a metallic foot-plate; fourthly, in a novel construction of a roller for roller-skates and trucks and small vehicles and casters; fifthly, in subordinate features of invention which will become apparent from the subjoined description.

The advantages resulting from the respective employment of the various features of my invention will be fully set forth as those features are severally described.

In the accompanying drawings, making part of this description, and to which reference is hereby made, Figure 1 represents a side view of a roller-skate embodying my invention. Fig. 2 is a transverse section of the same, taken at the line X X of Fig. 1 and looking rearward. Fig. 3 is a transverse section of a part of same, taken at the line Y Y of Fig. 1, the two rollers shown in Fig. 2 being exchanged for one roller. Fig. 4 is a view in perspective of the lower plate upon which the cushion rests. Fig. 5 is a perspective view of the said cushion. Fig. 6 is a perspective view of a spider which rests upon the cushion and in turn

supports the foot-plate. Fig. 7 is a view of one mode of strengthening a wooden foot-plate for the connection between the same and the devices holding the roller. Fig. 8 is a view of the cushion modified in form. Figs. 9 and 10 illustrate the construction of my improved forms of roller.

A indicates the foot-plate of the skate, made of any suitable form and material, and in Fig. 7 shown as made of wood and in the remaining figures as made of metal. When made of metal the side pieces, *a*, and end pieces, *b*, are preferably made with and of the same piece of metal as the foot-plate. The pieces *a* lie outside of the usual leather piece, *d*, and the pieces *b* lie inside the said piece *d*. The pieces *a* and *b* are fastened to the heel-piece *d* in any of the usual ways—viz., by riveting, &c. The heel-piece *d* and the metallic piece *e*, being old and attached in the usual manner, are here passed over without more particular mention.

B indicates a roller, made in any desired manner, and in the skate shown in Fig. 1 there are four of said rollers. Where the skate is so constructed that the number of rollers may be diminished from four to three or two the roller is provided with a central perforation, through which the rod or axle C, on which the roller turns, passes. The rod is connected to a suitable device for supporting the upper parts of the skate, and where opportunity in the construction is afforded for changing the number of the rollers the said device consists of a yoke, E. Through the lower arms of this yoke the rod C passes, and thence through the two rollers B, placed outside of the yoke, and the latter being between the said rollers. The rollers are kept upon the rod C by any suitable means—as, for example, a pin through each end of the rod, or by end washers, as *f*, suitably secured to the rod. In the present instance the washer shown at the left-hand side in Fig. 2 is kept on the rod, because the end of the rod is swelled or enlarged, as shown at *g*, and the other washer is kept on the rod by a headed pin, *h*, passing through the washer and the rod. The mode of exchanging these two rollers for one is as follows: The operator is preferably provided with a short rod, C, and, removing the rollers and washers, if any, from the long axle-rod C, he places one of the roll-

ers between the arms of the yoke E, and passes the short rod C through the yoke-arms and roller, and adds the washers, if any, and secures the rod from slipping out of the rollers 5 and washers, if any.

A yoke and two wheels may be used at one end of the skate, the other end being provided with one or two wheels, the one not being exchangeable for two or the two for one roller; 10 or each end of the skate may be provided with a yoke, in which event the skate may be made to run with one roller at front and one roller at rear, or with two rollers at front and one at rear, or vice versa, or with four rollers, two in 15 front and two at rear. Whenever two rollers are exchanged for one a long axle-rod, C, is employed, and the rollers are preferably placed in the position shown in Fig. 2. The advantages of thus changing the rollers are apparent 20 to any one acquainted with the use and operation of roller-skates. The movement and operation of the rolling portions of the skate are changed, the strain upon the muscles of the foot and ankle is altered, and a rest is afforded 25 to the same. There is a rest afforded by change of the bearing of the skate upon the ground. Around curves the single rollers afford most rest, and usually allow the most speed on smooth spots, while on straight runs and 30 courses the double rollers secure most rest, and always best brace the foot. Changing the number of rollers from day to day affords better opportunity for the more perfect and thorough development of all parts of the foot 35 and ankle.

So far as the aforesaid construction of the running-gear has to do with the capacity for increasing and diminishing the number of rollers, it is immaterial how the yoke is connected 40 to the upper portions of the skate.

In carrying out that feature of my invention heretofore referred to under the head of "first" I provide the upper portion of the device which is supported on the roller-axle with 45 a plate, H, either made one with the said supporting device or made separate therefrom. In the present instance, for the convenience of manufacture, the plate H is made separate. Any suitable mode of connecting the plate H 50 to the said supporting device may be employed.

Where the yoke E is employed as the supporting device the preferable mode of connection is as follows: The plate H is provided with flanges S, between which the upper end 55 of the yoke E clearly fits. The shape of the plate in plan view may be many-sided, or square, triangular, or circular, as shown. The plate H supports a cushion, K, of rubber or other elastic resilient substance or material, 60 of any suitable shape, but preferably in plan view of the same shape as the plate H is in plan view. When desired the cushion may consist of a metallic spring. The plate H, for convenience of holding the cushion in position 65 and preventing the latter, when compressed, from bulging out too much at its edge or pe-

riphery, is provided with an outlying upright flange, m, which closely incloses the lower part of the edge or periphery of the cushion K. The upper surface of plate H, for preventing 70 the rubber from slipping or turning around within the flange m, is further provided with one or more projections, (here shown as of the preferred form,) n, these projections entering 75 corresponding recesses or grooves, o, in the bottom of the rubber cushion K. The cushion may come next to and immediately support the foot-plate, and where the latter is of wood or of cast-iron is a very desirable plan. Where the foot-plate is of thin sheet metal a 80 spider or plate, L, is preferably placed between the cushion K and the foot-plate. In order to prevent the spider L from turning upon the foot-plate, one is provided with projections or bolts fitting into the other. In the present 85 instance the projections consist of pins or lugs projecting from spider L, passing through the foot-plate, and riveted to the latter. In order to prevent the cushion from turning upon the spider L, the latter is provided with projec- 90 tions, (in the present instance these projections being arms n, here shown of a preferred form,) which enter corresponding recesses in the cushion. The upper face of the cushion between said arms rests against the foot-plate. 95 The spider L, for conveniently holding the cushion in position and preventing the latter, when compressed, from bulging out too much, is further provided with a flange, t, which closely embraces the upper portion of the edge or pe- 100 riphery of the cushion K.

Obviously either or all of the projections for preventing the cushion from turning may arise from or be formed upon the cushion, in which event corresponding recesses to receive said 105 projections will be formed in the surface or surfaces opposing the side or sides of the cushion.

In Fig. 8 the upper surface of the cushion is shown furnished with such projections. These 110 latter, where spider L is present, would fit into recesses in said plate; but as in this figure, 8, the spider L is dispensed with, the projections fit into the foot-plate. The projections, where desired, could be formed upon the foot-plate 115 and the recesses for their reception be present in the cushion. Also, the flange t, where spider L was dispensed with, would be preferably present at the foot-plate.

The plate H and the cushion and foot-plate 120 (and spider L also, where present) are to be connected together in any suitable manner.

For the purposes of most successfully utilizing the resiliency and elasticity of the cushion K, as well as for cheapness in cost and simplicity and facility of manufacture, I prefer to connect the same by a connecting-rod, W, 125 connected to the plate H or the roller-gear and foot-plate through the center of said parts and suitably secured. The rod, as shown in Figs. 130 1 and 2, is a bolt having a head resting in a countersunk cavity in the foot-plate, and pro-

vided below plate H and yoke E with a nut, v, screwed onto its lower end, the rubber being preferably somewhat compressed by means of said nut. This rod W may have a head at one end and a screw-thread on its other end, and be screwed directly into plate H or the roller-gear, as shown in Fig. 3. Where a wooden foot-plate is used the flanged thimble Z is preferably employed, as shown in Fig. 7, and is preferably secured not only by bolt W, but by small screws Z', passing into the wood of the foot-plate. The holes in the cushion K and spider L, and preferably also in plate H, are in diameter larger than the diameter of rod W, in order to allow the rod lateral play when the cushion is compressed more at one part of its edge than at another. This feature of my invention, relating, as it does, to the employment of the resilient cushion K, can be employed with various and different kinds of devices, connecting its support H to the roller-axle, and with foot-plates provided with various numbers of rollers. Nevertheless it is preferable to employ the same with the yoke E, as the latter affords a wide base not only for the support of the cushion K, but for acting as a lever to compress one part of the cushion K, and also to turn, or rather twist, the latter with plate H upon spider L or the foot-plate.

The essential matter of the feature of my invention referred to under "first" consists in the employment of a resilient elastic cushion interposed between the roller-gear and the spider L, or the foot-plate, or their equivalent, and constituting the support of the foot-plate over whatever roller or rollers and at that end or ends of the foot-plate where it may be used.

The cushion K imparts a yielding, rocking, elastic, and pleasant motion to the skate, softens the shock of the impingement of the rollers upon obstacles over which they roll, and materially contributes to deaden the sound. This latter advantage is a very important one. Again, the elastic resilient block or cushion K permits the roller or rollers to be turned so that it or their vertical plane shall be at an angle to the vertical longitudinal plane of the foot-plate. In other words, it permits the roller or rollers to be turned to a limited degree about the vertical rod W as an axis. In turning curves the rollers are thus allowed to follow their natural tendency, and the skate being inclined toward the center of the curve which the skater is following, and where the rollers are single, their inner edges being above its frictional contact with the floor, the roller or rollers will turn toward the inside of the curve, and thus facilitate the skater in his effort to follow the curve. As soon as the skater lifts his foot the resilient nature of the cushion K causes the roller to resume its usual position, wherein its vertical plane is parallel to the vertical longitudinal plane of the foot-plate.

In order to carry out those purposes of my invention which relate to making a roller-skate resilient and easy under the pressure of the

skater, I prefer to employ a roller whose periphery is of rubber or other elastic resilient substance. A preferred mode of construction of said roller is as follows:

2 is a disk provided with a rod or shank, 3, shouldered down at 4, and the extension 5 of the rod being of a smaller diameter than that of the first part, 3. A disk, 6, of rubber or other elastic resilient substance, is then placed on the shank 3, as shown in Fig. 9. An annular plate, 7, of the same diameter as disk 2, is then placed against the rubber, and the disk 6 being compressed between the plate 7 and disk 2, the extension enters the hole in said plate 7, and is then riveted in place. For the purpose of more readily and effectively riveting on the plate 7, the orifice of the latter is enlarged outwardly, as shown, and the tongue or extension 5 is caused to spread into said enlargement, thus forming a firm and cheap connection. The disk 6 before compression is wider than the space it is to occupy between disk 2 and plate 7, and it is also of greater diameter than the disk 2. In rollers of the size shown in Fig. 9 the rubber before compression extends beyond the edge of the disk, preferably about three-sixteenths of an inch. The inner surfaces of the disk and plate below the peripheral edge may be curved, but are preferably straight. The edges of the disk and plate are preferably rounded, as shown in Fig. 9, so as not to cut the rubber, and so as to assist in throwing the edge 8 of the rubber out in the proper shape. When the rubber is compressed it follows over the line of the disk in an arched, curved, and beautiful form, and assumes the shape shown in Fig. 9.

Another method of connecting the plate 7 to the shank 3 is where the shank is provided with a screw-thread and the orifice of plate 7 is provided with a female screw, the plate 7 being screwed upon the said shank, compressing the disk 6. A convenient mode of making the last-named device is shown in Fig. 10, where the disk or head 2 is provided with a washer, 9, fitted against said head, and having its edge shaped as is the edge of disk 2 in Fig. 9. The elastic disk 6 being placed on the shank and against the washer, a second washer, 9, of the same size and shape as the first, is placed on the shank, and then a nut or plate, 7, is screwed onto the shank, and the disk 6 is compressed to place. It will be apparent that the disk 6 and washer 9 of Fig. 10 perform the function of disk 2 of Fig. 9, and plate 7 and washer 9 of Fig. 10 perform the function of plate 7 of Fig. 9. The disk and shank may be respectively provided with journals 13, or be bored so that the roller may revolve upon an axle.

The advantages of this device (shown in Fig. 10) are, first, it admits of the plate 7 being easily and sufficiently screwed up without impinging directly against the rubber, which latter, by the great friction it presents, has a tendency to retard and prevent the plate 7,

when resting directly against the rubber, from being sufficiently screwed up to properly compress the disk 6; second, it allows the same head or disk 2 and shank-plate 7 to be employed in making rollers of different sizes by substituting washers of other sizes for those herein shown, the disk 6 being always of the proper comparative proportion, especially as to diameter.

10 In this manner with the same-sized bolt may be cheaply and quickly made small wheels or rollers for children's skates, and for casters, &c., and larger wheels for trucks and other vehicles.

15 The systematic, symmetrical, exact, and peculiar shape of the elastic disk when compressed is produced by reason of the compressing plate and disks of the shape substantially as shown. The inward flat faces contribute to force the rubber or disk 6 upward. The concave embracing-plates of the Turner (English) roller operate as pinchers, and are not able to produce the same form of rubber wheel as my device does.

25 Experience has demonstrated that where the disks or embracing-plates are concave the rubber will flow inward and the peripheral edges of the concave jaws form a harsh bed or support for the rubber, causing the same to be cut through when the weight of the operator is brought to bear.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. The cushion K, provided with recesses, 35 in combination with plate H, provided with projections S, flange *m*, and foot-plate, the cushion supporting the latter, substantially as and for the purposes specified.

2. The cushion K, provided with recesses, 40 in combination with plate H, provided with projections S, and spider L, provided with projections *n*, and the foot-plate, substantially as and for the purposes specified.

3. The cushion K, provided with recesses, 45 in combination with plate H, provided with projections S and flange *m*, and spider L, provided with projections *n*, and the foot-plate, substantially as and for the purposes specified.

4. The cushion K, provided with recesses, 50 in combination with plate H, provided with projections S, and spider L, provided with projections *n* and flange *t*, substantially as and for the purposes specified.

5. The cushion K, provided with recesses, 55 in combination with plate H, projections S, and flange *m*, and spider L, provided with projections *n* and flange *t*, substantially as and for the purposes specified.

6. The combination of the cushion K and 60 roller-gear, plate H, cushion K, and foot-plate, and central connecting-rod W, the orifices in the cushion and plate H being made of greater diameter than that of the rod, substantially as and for the purposes specified.

7. The combination of the cushion K and roller-gear, plate H, cushion K, and spider L, and foot-plate, and central connecting-rod W, the orifices in plates L and H and in cushion K being of greater diameter than that of the central connecting-rod, substantially as and for the purposes specified. 65 70

8. In combination with the rollers B, axle C, yoke E, adapted to receive a roller, and provided with a supporting-plate, the cushion K, and foot-plate, and connecting devices, and devices for preventing undue rotation of the roller-gear, substantially as and for the purposes specified. 75

9. In combination, with the rollers B, axle C, yoke E, adapted to receive a roller, and provided with a supporting-plate, H, the cushion K, provided with recesses, and the foot-plate, and projections entering said recesses, substantially as and for the purposes specified. 80

10. In combination, roller or rollers B, axle C, yoke E, plate H, having projections S and flange *m*, cushion K, formed with recesses *o*, foot-plate A, and central connecting-rod W, the orifices of plate H and cushion K being of greater diameter than that of rod W, substantially as and for the purposes specified. 85 90

11. In combination, the roller or rollers B, axle C, yoke E, plate H, having projections S and flange *m*, cushion K, formed with recesses *o*, plate H, provided with recesses *o*, foot-plate A, and central connecting-rod W, the orifices of plate H and cushion K being of greater diameter than that of rod W, substantially as and for the purposes specified. 95 100

12. The combination of the disk 2, rod 3, shouldered at 4, and annular plate 7, and the elastic resilient disk 6, substantially as and for the purposes specified.

13. The combination of the disk 2, rod 3, shouldered at 4, extension 5, and annular plate 7, having its orifice enlarged outwardly, and the elastic resilient disk 6, substantially as and for the purposes specified. 105

14. The combination of disk 2, washer 9, shank 3, and disk 6, and washer 9 and plate 7, secured together, substantially as and for the purposes specified. 110

15. The combination of the disk 2, washer 9, shank 3, and disk 6, and washer 9 and plate 7, screwed onto shank 3, substantially as and for the purposes specified. 115

16. The combination of the shank and disk 6, compressed between compressing plates or disks or washers, having peripheral rounded and curved edges, substantially as and for the purposes specified. 120

JAMES K. ROSS.

Witnesses:

G. C. WILSON,

J. WM. STREHLÉ.

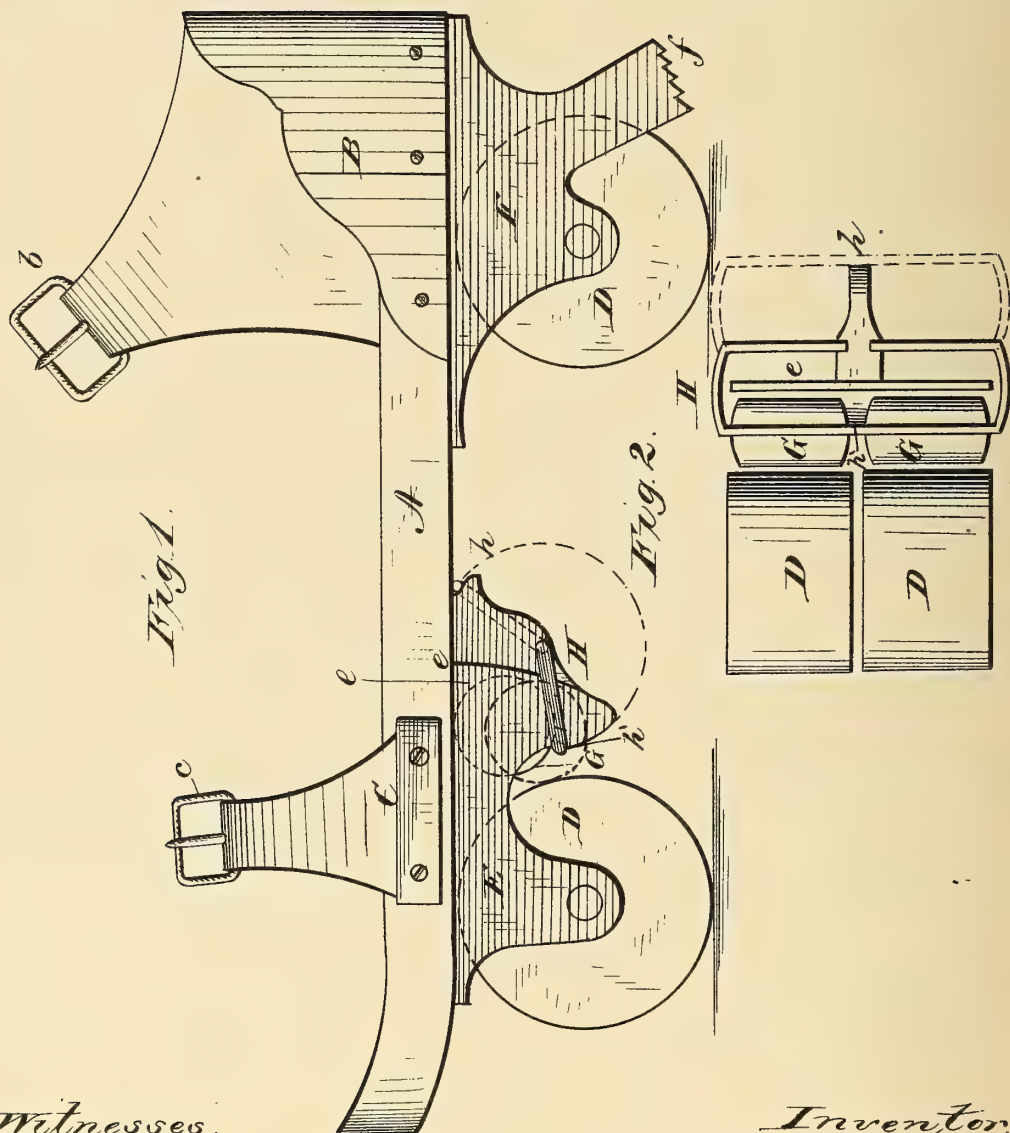
(No Model.)

E. W. TAYLOR.

ROLLER SKATE.

No. 255,694.

Patented Mar. 28, 1882.



Witnesses.
F. L. Ourand
George Cornell.

Inventor.
Elmore W. Taylor.
per L. Deane
his atty

UNITED STATES PATENT OFFICE.

ELMORE W. TAYLOR, OF DETROIT, MICHIGAN.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 255,694, dated March 28, 1882.

Application filed July 20, 1881. (No model.)

To all whom it may concern :

Be it known that I, ELMORE W. TAYLOR, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of a skate embodying the present invention. Fig. 2 is a detail to show the construction and operation of the friction-roller.

This invention relates to that class of devices known as "roller-skates;" and the novelty consists, first, in a stop or clutch or equivalent device to prevent the reverse or backward motion of the skate; also, in the use of a brake or equivalent device whereby at the will of the skater the skate can be stopped; and, finally, in the general construction and combination of all the parts, whereby a very useful, safe, and beautiful skate is produced, all as will now be more fully set out and explained.

In the drawings, A denotes the usual body or foot-rest of a roller-skate; B, the heel-piece, and C the toe-piece, respectively provided with straps and buckles *b* and *c*, all in any ordinary or desired way.

D and D' are the usual rollers, properly mounted at front and rear in supports or frames E and F, which are duly attached to the body A. To the rear of the forward rollers are applied the loose friction-rollers G, that are held in place by the construction of the main-roller support E, which has in its rear a chamber *e*, formed by the sides and back wall of E, the back *e'* being curved to the front. When the skate moves forward the roller G rests or revolves loose in the chamber *e*. When the wheel D reverses, the friction-roller drops into the wedge-shape space between D and *e'*, and comes in frictional contact with the main roller D, causing a lock or brake upon the roller.

If for any reason it is desired to so adjust the friction-rollers G that the skate may have free backward movement, as for skating backward, it is only necessary to change the swinging wire spring H from the notch *h* to the notch *h'*. The spring then strikes the lower surface of the friction-rollers, and elevates them, as shown by the dotted circle, and removes them from contact with the main roller D, allowing a free backward or forward movement of the skate. If desired, such a clutch or brake may be applied to the rear as well as to the front rollers, or both.

The lower part or end of the frame F, in which the rear rollers, D', are mounted, is serrated at *f*. In any ordinary use of the skate this edge or end is sufficiently above the floor or ground not to obstruct in the slightest manner the use of the skate; but if the skater should desire to stop the skate he can do this with the utmost facility by merely raising the forward part of the foot, which movement will bring the edge *f* upon the floor or ground and speedily prevent the further onward movement of the skate. This construction is also of advantage in preventing the skater from falling backward by losing his balance.

All of the above features are very important, as has been amply proved by the experience of persons who have used these devices. With this skate one is enabled to readily walk up inclines, go up or down steps or stairs, over crossings, and such places where it is not practicable to skate.

The changes in structure now described will not in any essential degree alter the appearance of the skate, or increase to any serious amount its cost.

It will be observed that in the mere detail of constructing or applying the stop or clutch to the forward rollers, I may make very many mere mechanical changes, without in the least departing from the invention above described.

Having thus described my invention, what I consider new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination of the roller with a loose and automatic stop, substantially as described.

2. In a roller-skate, a frame for the roller having a chamber for a loose friction-roller, substantially as shown and described.

3. The frame E, having partition *e*, combined with roller D and spring H, substantially as set forth.

4. The rear frame, F, in which are mounted the rollers D', provided with a serrated lower edge, *f*, substantially as set forth.

10 5. In a roller-skate, and in combination with

the rollers, an automatic stop which is capable of being moved out of contact with the rollers, when desired, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ELMORE W. TAYLOR.

Witnesses:

S. S. BABCOCK,

R. A. PARKER.

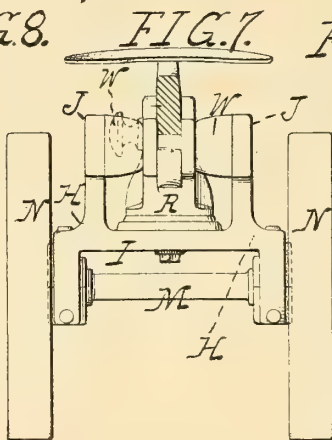
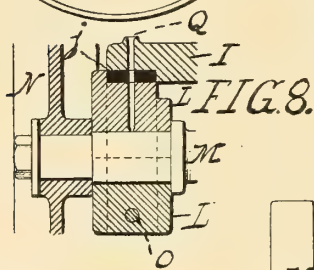
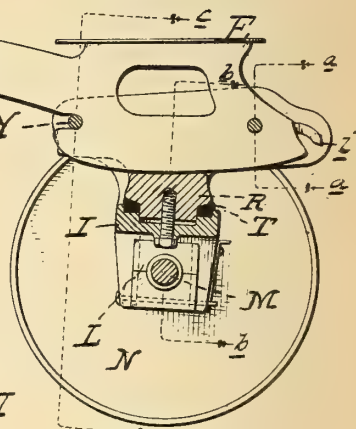
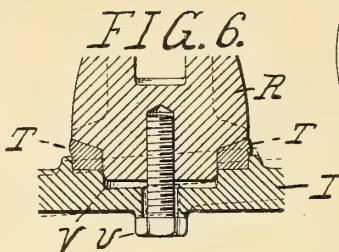
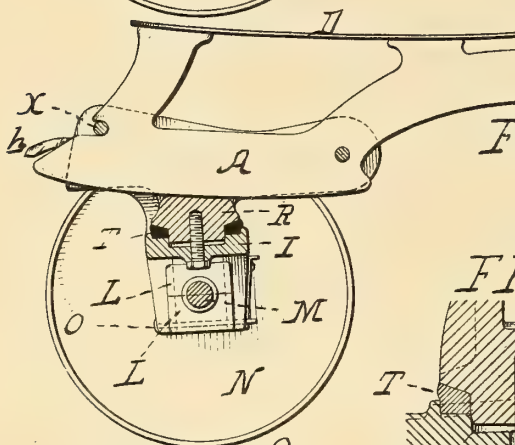
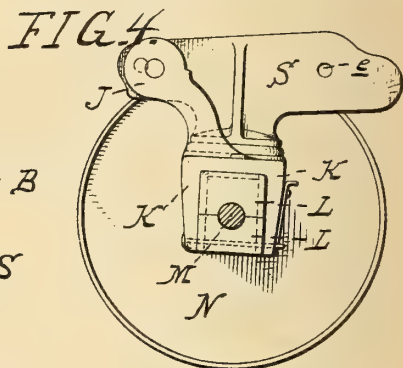
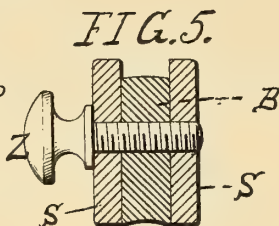
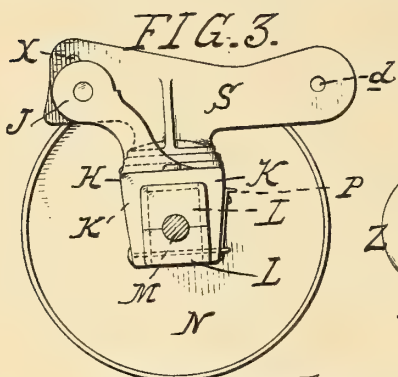
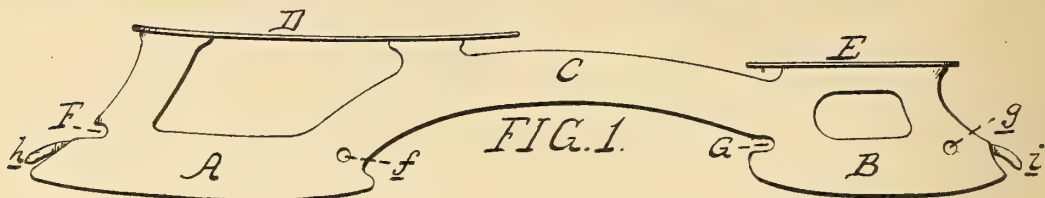
(No Model.)

W. H. RUSHFORTH.

COMBINED ROLLER AND RUNNER SKATE.

No. 255,819.

Patented Apr. 4, 1882.



Witnesses.

John K. Rupertus
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Inventor.

Wm. H. Rushforth
By his Attorneys,
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Bonsall Taylor.

UNITED STATES PATENT OFFICE.

WILLIAM H. RUSHFORTH, OF CAMDEN, NEW JERSEY.

COMBINED ROLLER AND RUNNER SKATE.

SPECIFICATION forming part of Letters Patent No. 255,819, dated April 4, 1882.

Application filed February 26, 1881 Renewed October 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY RUSHFORTH, of Camden, New Jersey, have invented a Combined Roller and Runner Skate, of which the following is a specification.

My invention relates to skates for use either upon ice or upon floors; and it consists in the combined runner and roller skate hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my skate as an ice-runner. Fig. 2 is a similar view of the same as a roller-skate, the trucks being shown in central sectional elevation; Figs. 3 and 4 are side elevations respectively of the front and rear roller-trucks. Fig. 5 is a transverse section on the line *a a* of Fig. 2, showing the method of attachment by means of a thumb-screw of the side plates of a truck to the runner. Fig. 6 is a front sectional elevation through the trunnion of one of the trucks on the line *b b* of Fig. 2; and Fig. 7 is a front elevation of the rear truck, section being supposed through the runner on the line *c c* of Fig. 2. Fig. 8 is a central sectional elevational detail, viewed from the front, taken through the roller-axle journal-box on, for instance, the line *b b* of Fig. 2; and Fig. 9 is a rear elevational detail of one of the journals of the trucks, showing the method of attachment of the roller-boxes.

Similar letters of reference indicate corresponding parts.

In the drawings, A B represent respectively front and back runners of an ice-skate, connected by an arched piece, C, and supporting in the usual manner foot-plates D E, adapted to be connected with the foot by studs, clamps, or straps in any usual manner. The ice-runner, which is, as shown, a double runner, is provided with notches F and G, respectively formed at the front portions of the front and back runners, A B, the office of which is to receive cross-studs in the clamp-plates of the trucks, whereof hereinafter.

H are the two trucks, conveniently constructed of the form shown in Figs. 3, 4, and 7—that is to say, with a bed-plate or axle-support, I, from which are erected standards J, branching forward from either side of the bed-plate, and constituting an integral portion of the same, as well shown in Figs. 3 and 4. The trucks being alike, a description of one will answer for both.

Depending on either side from the bed are journal-box casings, K, which embrace upper and lower axle-packings, L, adapted to retain the axles M of the rollers N. These packings are retained in place in their respective casings by means of a packing-pin, O, running horizontally through openings in the casings and lower-axle packing-piece, which pin is prevented from shaking out by means of a sliding lock-piece, P, adjusted on the side of the casings, and adapted to be slipped through an opening in the outer extremity of the packing-pin, as well shown in Fig. 9.

J, Fig. 8, is a rubber spring inclosed in the casing above the upper-axle packing, to prevent rattling and act as a cushion to the axle.

Q is an oil-receiver tube, (shown in Fig. 8,) adapted to continuously oil the journals of the axles.

Centrally erected upon the bed-plate I is a trunnion, R, branching at its upper portion into two parallel clamp-plates, S, which are adapted to receive and hold rigidly in place the front and back runners, A B, of the runner-skate when the latter is applied to the trucks to convert it into a roller-skate. The trunnion (shown in partial sectional detail in Fig. 6,) rests upon a circular packing-ring, T, applied to the bed-plate, which serves as a spring-cushion to the trunnions and its supported foot plates. A connection permitting of a slight rotation and lateral vibration is established between the trunnion and its supported foot-plate and the bed-plate of the truck by means of the swivel connecting-screw U.

An oil-chamber, V, is formed in the bed-plate beneath the base of the trunnion, for the lubrication of the same, in the manner shown in Fig. 6.

W are side spring-cushions, of rubber or kindred material, affixed to the inner upper extremities of the standards J or upper portions of the trucks, which cushions project inward against the clamp-plates of the trunnion and serve to cushion said plates (which really constitute the frame of the foot-plates) against the truck in the rotation or vibration of the trunnion about the truck, which action, whether it be of rotation or vibration, is due to the various movements of the skater in turning, rolling, and balancing.

Such being a description of the construction of one of the trucks, it is to be repeated that

both trucks are of the same construction, differing only in the form of their clamp-plates S, as contrasted in Figs. 3 and 4, to adapt said clamp-plates to properly embrace front and back runners of slightly different shape.

The application of the runners to the trucks is by introducing the front and back runners into their respective trucks between the clamp-plates thereof by engaging their respective notches F G with cross-studs X Y, set between the clamp-plates, (shown in Figs. 2 and 7,) and finally by tightening thumb-screws Z, screwing through threaded holes *d e* in the clamp-plates and through holes *f g* in the runners, bored to register with the holes first named when the trucks have been properly applied.

h i are teats or lips formed in or applied to the front of the front runner and the back of the back runner, as well shown in Fig. 1, their office being to assist the skater in retaining and recovering his balance when the skate is employed as an ice-runner.

The form of the bridge-piece C, which connects the front and back runner, is arched, by which construction the greatest strength is given to the skate whether employed upon the ice or upon a floor.

It will be observed that in the use of my device as a parlor-skate the foot-plates in reality rest upon springs, the action of the rubber packing-ring T, upon which the trunnions of the clamp-plate rest, and of the rubber springs *j*, being that of springs, while in addition thereto a certain amount of lateral vibration is allowed to the foot-plates by the lateral movement of the trunnion against the side cushions, which control and steady such lateral throw.

From the foregoing relationship of parts results the advantage that each truck is separately so adjusted as to be capable of independent movements irrespective of the other truck, whereby my roller-skate is adapted to accommodate itself without jar to the user to irregular floors, pavements, or the like. Each truck being also separately capable of a slight rotation about its trunnion-axis, renders the skate well adapted for use in the turning of sharp curves and lessens the chances of breaking strains upon the trucks.

It is obvious, finally, that as a roller-skate my device is wholly self-lubricating, being provided with means for retaining oil enough to continuously lubricate all parts subjected to friction.

I do not confine myself to the exact form of detailed parts shown, as it is obvious that many formal changes can be made by a skillful mechanic without departure from the essential features of my invention. Thus, for instance, under proper modification the ice-runner can be made as a single instead of as a double runner, or the trucks applied directly to the foot-plates.

Having thus described my invention, I claim—

1. As a combined runner and roller skate, the combination of a double ice-runner, A B, united by a bridge-piece, C, which establishes a fixed relation between its respective runners, with two separate roller-trucks removably applied to the runners, substantially as set forth.

2. In combination with a runner-skate, two separate roller-trucks removably applied thereto, and each having an independent vibratory and rotary motion with respect to the plane of the foot-pieces of the runner-skate, substantially as set forth.

3. As a means of attaching the foot-plates and the runner of a skate to two separate roller-trucks, the clamp-plates S, being a part of the trucks, and being adapted to embrace the runner by means of cross-studs connected with the clamp-plates and engaging with notches in the runners, and by means of thumb-screws adapted to unite both clamp-plates and runners, substantially in the manner set forth.

4. In combination with a runner-skate, two separate roller-trucks removably applied thereto by means of clamp-plates, in the manner described, and each connected with the runners in such manner as to each be capable of independent vibratory and oscillatory motion with respect thereto, substantially as set forth.

5. The oil-chamber V, formed in the bed-plate I at the base of the trunnion R and about the connecting-screw U, as and for the purpose specified.

6. As a device for securing the axles of roller-trucks, the combination of the journal-box casings A, upper and lower packings, L, packing-pin O, and sliding lock-piece P, substantially as set forth.

In testimony whereof I have hereunto signed my name this 12th day of February, A. D. 1881.

WILLIAM HENRY RUSHFORTH.

In presence of—

J. BONSALL TAYLOR,
JOHN JOLLEY, Jr.

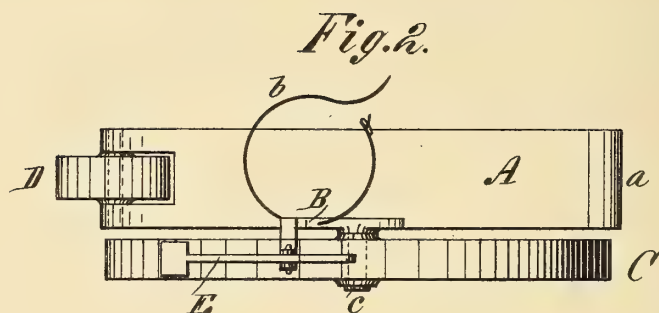
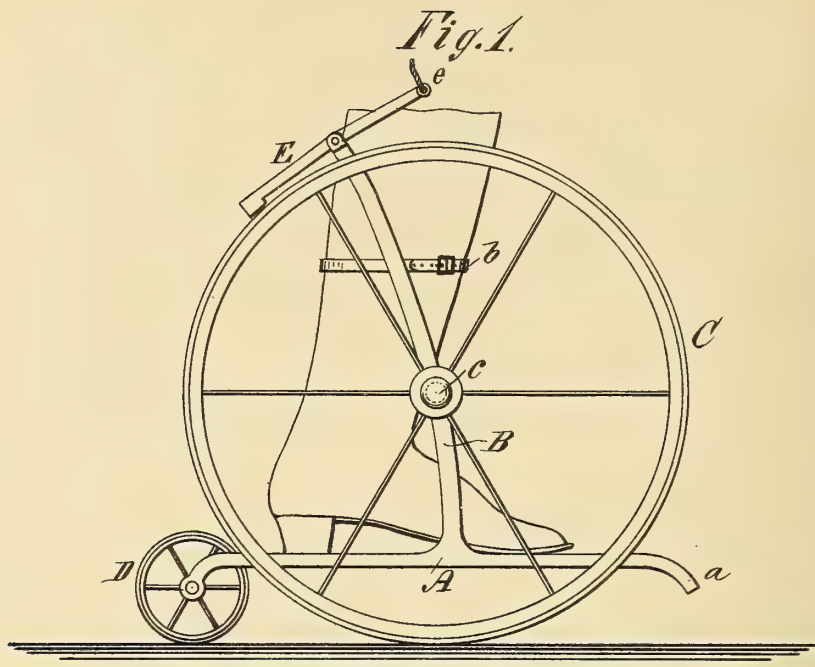
(No Model.)

E. THOMPSON.

PEDICYCLE.

No. 256,765.

Patented Apr. 18, 1882.



WITNESSES:

Theo. G. Hoster
L. Seligman

INVENTOR:

E. Thompson
BY *Mum & Co*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ELEAZER THOMPSON, OF DANBURY, CONNECTICUT.

PEDICYCLE.

SPECIFICATION forming part of Letters Patent No. 256,765, dated April 18, 1882.

Application filed May 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, ELEAZER THOMPSON, of Danbury, in the county of Fairfield and State of Connecticut, have invented a new and Improved Pedicycle, of which the following is a specification.

In the accompanying drawings, Figure 1 is a side elevation of my invention as it appears when attached to the leg for use, and Fig. 2 is a plan view of my invention.

My invention is an improvement in the class of pedicycles or foot-supports mounted on wheels, one of which wheels is relatively larger than the other and arranged in advance thereof.

My invention consists in so constructing the plate on which the foot rests that it is adapted, when inclined forward and downward, to take hold on the floor or ground and thereby aid in propulsion, as hereinafter described.

Similar letters of reference indicate corresponding parts.

The upright B of the foot-support A is curved, as shown, so that the upper end thereof may be strapped firmly against the leg below the knee by the strap *b*, and so that the journal *c* of the main wheel C will come in front of the line of direction of the weight of the person. The rear end of the foot-support A is bifurcated, and between the parts thereof is placed

the small wheel D. The forward end of the foot-support is curved downward, as shown at *a*. By this arrangement it will be understood that the wheel D of the foot-board may be raised from the ground—or, in other words, the foot-board rocked by the action of the foot—and the forward end of the board struck against the ground for moving the person forward. This rocking action of the foot-board is of great advantage, as by that means the person is enabled to provide himself in an instant with a secure and steady support.

To the upper end of the upright B is pivoted the brake E, which is operated, by the cord *e*, by the hand of the traveler.

The foot-board should be provided with suitable heel and toe straps for securing the foot to the board.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

The foot-plate A, curved downward at its front end and provided with supporting-wheels C and D, all as shown and described, to operate as and for the purpose specified.

ELEAZER THOMPSON.

Witnesses:

LYMAN PLATT,

DAVID B. BOOTH.

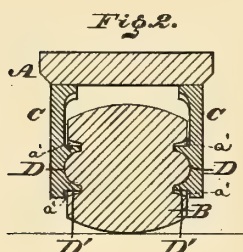
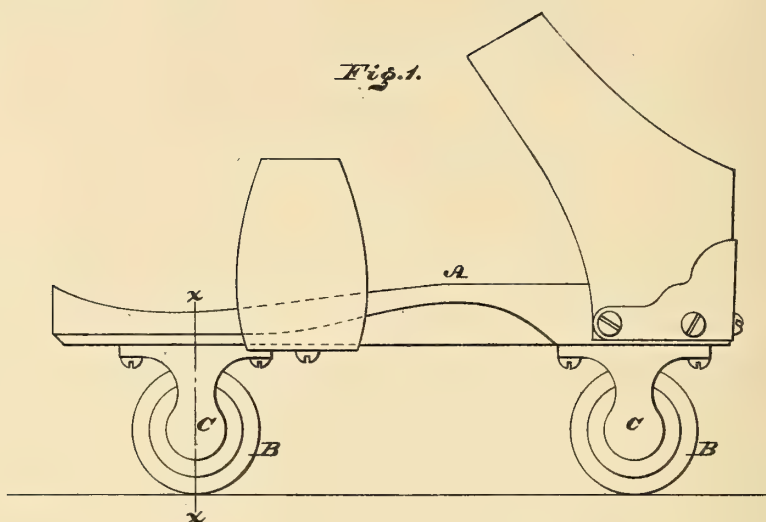
(No Model.)

G. L. WITSIL.

ROLLER SKATE.

No. 257,426.

Patented May 2, 1882.



WITNESSES:

L. Douville
W. F. Kircher

INVENTOR:

INVENTOR:
George L. Witsell,
BY *John A. Diederstein* ATTORNEY.

UNITED STATES PATENT OFFICE.

GEORGE L. WITSIL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
EDWARD C. EDWARDS, OF BROOKLYN, NEW YORK.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 257,426, dated May 2, 1882.

Application filed November 22, 1881. (No model.)

To all whom it may concern :

Be it known that I, GEORGE L. WITSIL, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Roller-Skates, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the roller-skate embodying my invention. Fig. 2 is a vertical section in line *xx*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

My invention consists of a roller-skate having spheroidal rollers, whereby provision is made for the lateral motions in skating and change of direction, said rollers being mounted in brackets which are rigidly secured to the foot-rest, the rollers having integral gudgeons and the brackets having integral bearings, thus providing strong and reliable connections of the rollers and brackets with the foot-rests.

It also consists of a novel construction of the rollers and their bearings, whereby the strength of the rollers and bearings is increased.

Referring to the drawings, A represents the foot-rest of a roller-skate and B the rollers thereof. Depending from the under side of the rest are brackets C, to which the rollers B are journaled by means of gudgeons D, which enter bearings D' on the brackets C, said gudgeons D projecting from the sides of the rollers and the bearings D' being on the inner faces of the brackets and integral therewith. The rollers B are of spheroidal form, of wood or other suitable material, and the gudgeons D are integral therewith, whereby the body of each roller is left solid, and consequently strong and durable. The bearings D' of the brackets are countersunk, so as to receive the gudgeons; but the sides of the rollers may be countersunk at their centers and the gudgeons formed on the brackets. In either case the centers of the rollers are not pierced through and weakened to receive pintles or axial rods.

It will be seen in Fig. 2 that the gudgeons D are flush with the sides of the rollers. This is occasioned by said gudgeons being set back or set into the sides of the rollers, thus leaving a groove, *a'*, around each gudgeon, into which projects the encircling raised edge of the corresponding bearing D'. By this construction the strength of the connection of the rollers and brackets is increased and the rollers are not liable to break away from the brackets.

When the skates are secured to the feet they may be operated as usual. As the body of the skater sways to the right or left, or it is desired to change the direction of skating and the body is thrown to the right or left, the skates are thereby inclined and the rollers, without shifting their bearings or moving the brackets C, roll, owing to their spheroidal form, on new places of their curved peripheries, whereby the motion of skating and change of direction are readily accomplished, it being noticed there is obviated the employment of pivotal brackets, which are weak, liable to break, and expensive.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination, with the foot-rest, of spheroidal rollers having integral gudgeons and brackets having integral bearings, substantially as and for the purpose set forth.

2. The rollers having gudgeons set into the sides thereof and grooves surrounding said gudgeons, in combination with the brackets having bearings which enter said grooves and encircle the gudgeons, substantially as and for the purpose set forth.

3. The combination, in a roller-skate, of rollers with gudgeons, and brackets with countersunk bearings for said gudgeons, substantially as and for the purpose set forth.

GEO. L. WITSIL.

Witnesses :

JOHN A. WIEDERSHEIM,
W. F. KIRCHER.

(Model.)

C. HERDER.

ROLLER SKATE.

No. 257,941.

Patented May 16, 1882.

Fig. 1.

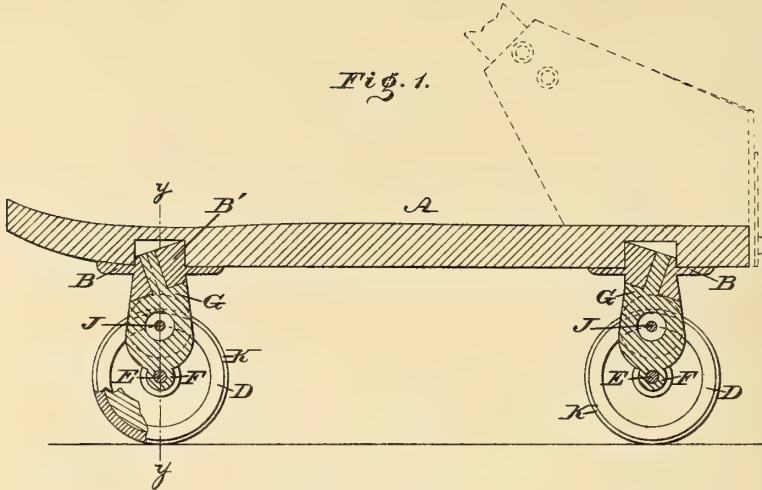


Fig. 2.

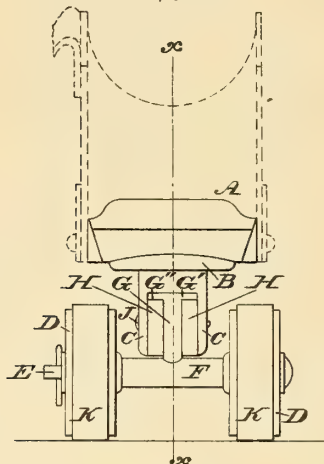
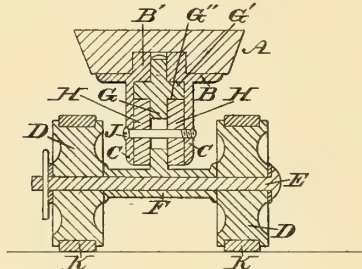


Fig. 3.



WITNESSES:

L. Douville
H. D. Kircher

INVENTOR:

Chas. Herder,
BY John Niederstein ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES HERDER, OF PHILADELPHIA, PENNSYLVANIA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 257,941, dated May 16, 1882.

Application filed March 6, 1882. (Model.)

To all whom it may concern:

Be it known that I, CHARLES HERDER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Roller-Skates, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of the roller-skate embodying my invention in line *x x*. Fig. 2 is a front view thereof. Fig. 3 is a transverse section in line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a roller-skate to which are fixed brackets having depending ears, between each of which are fitted springs and rotating spindles, whereby the construction of the skate is simplified, rendered more durable, and its expense decreased.

It also consists of means for increasing the bearings of the spindles and the connection of the brackets with the foot-rest.

Referring to the drawings, A represents the foot-rest of a roller-skate, to the under side of the front and rear of which are rigidly secured brackets B B, from which depend ears C C, formed with the brackets.

D represents the rollers of the skate, each pair of which is secured by means of the axial pin E to a horizontal boss, F. From the center of the boss rises a flat-sided spindle, G, which is passed between the ears C C, and has its upper end rotatably guided in an opening in the bracket B, the width of the spindle being less than the width of the space between the ears.

H represents pieces of rubber or other elastic material or springs, which are fitted between the spindle and ears, so that there is a spring between each ear and the spindle, or, in other words, a spring on each side of the spindle. In the ears, springs, and spindles are openings, through which is passed a securing-pin, J, whereby the rollers are connected to the skate and the springs H retained in position.

The upper portion of the spindle is formed with a head, G', which is in contact with the under side of the bracket and provides an enlarged bearing for the spindle, thus increasing

the strength of the connection of the rollers with the bracket and causing the spindle to turn true on the bracket. The base of the head forms a shoulder, G'', which overhangs the springs H and limits the upward expansion of said springs, whereby the strength of the latter when in service is materially preserved.

The skate is connected to the foot by proper means, and when in use, when the skater sways his body either to roll to the right or left or change his direction for any purpose, the rotating spindles permit the axles of the rollers to turn from their right-angular positions and accommodate themselves to the inclination of the foot-rest or direction of the weight of the body superimposed thereon. In the turning motions of the spindles the flat sides of the spindles compress the springs against the ears C, thus easing the thrust of the spindles as they are turned and preventing strain on the contiguous parts. As soon as the foot-rest is relieved the springs expand and restore the parts to their normal position.

It will be seen that the spindles are strong and durable, and that they are guided at top and have enlarged bearings thereat. Furthermore, the brackets have each an upwardly-projecting boss, B', which enters an opening on the under side of the foot-rest, thus strengthening the connection of the bracket with the foot-rest, and, furthermore, provides a lengthened bearing for the top of the spindle. Again, the brackets are directly secured to the foot-rest, thus simplifying the construction of parts and decreasing the leverage, which otherwise serves to wrench the parts from their fastenings. The rollers are grooved circumferentially, and in the grooves are fitted endless bands K, of soft rubber, which form the treads of the rollers, so that the skate is run or rolled with ease and without harshness or noise, the sides of the grooves preventing displacement of the rubber, the bands being stretched over the rollers, and thus reliably retaining their position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The brackets fixed to the foot-rest and provided with depending ears, in combination

with rotating spindles rising from the bosses of the axial pins of the rollers and fitted between said depending ears and the springs, substantially as and for the purpose set forth.

5 2. The fixed brackets, in combination with the rotating spindles, whose upper ends are guided in said brackets, substantially as and for the purpose set forth.

10 3. The fixed brackets, in combination with the rotating spindles, whose upper ends are guided in said brackets and provided with

heads which bear against the brackets, substantially as and for the purpose set forth.

4. The rollers and spindles, in combination with the brackets formed with upwardly-projecting bosses, substantially as and for the purpose set forth. 15

CHAS. HERDER.

Witnesses:

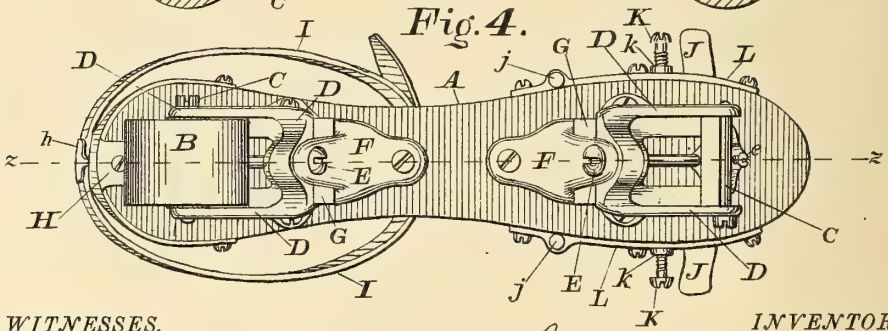
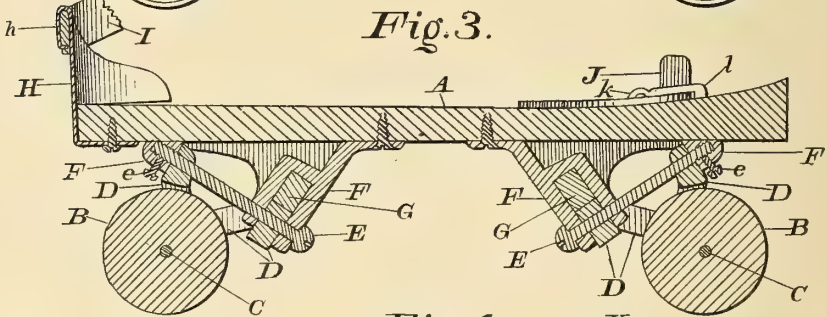
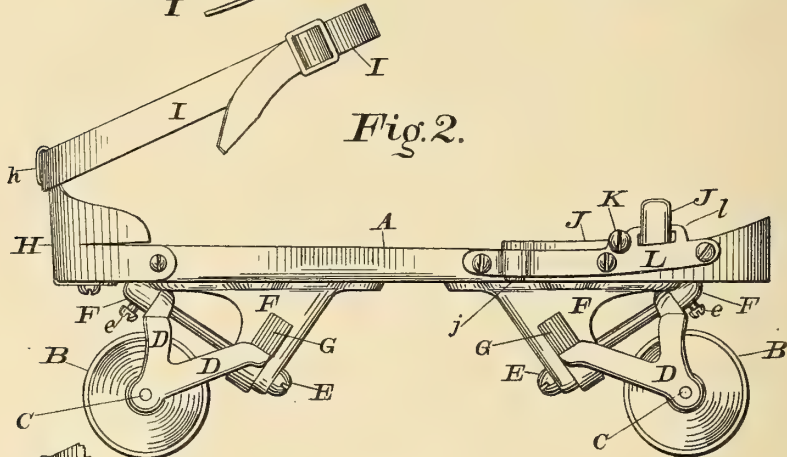
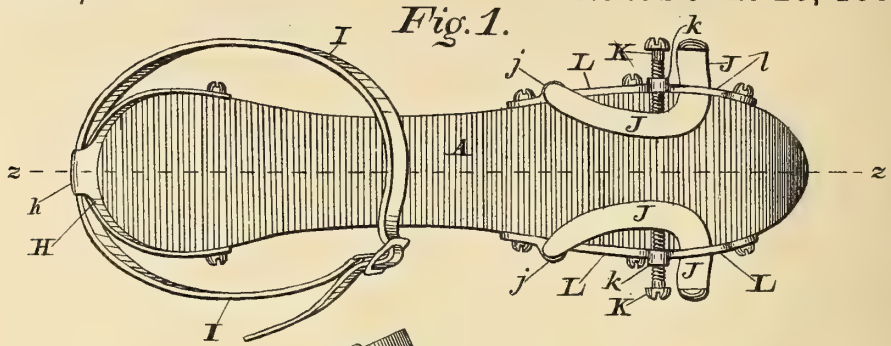
JOHN A. WIEDERSHEIM,
A. P. GRANT.

(Model.)

T. A. NEELY.
ROLLER SKATE.

No.259,708.

Patented June 20, 1882.



WITNESSES.

Chas. N. Leonard.
Chas. L. Thurber.

INVENTOR.

Thad. A. Neely,
PER
C. Bradford,
ATTORNEY

UNITED STATES PATENT OFFICE.

THADDEUS A. NEELY, OF MUNCIE, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 259,708, dated June 20, 1882.

Application filed March 14, 1882. (Model.)

To all whom it may concern:

Be it known that I, THADDEUS A. NEELY, of the city of Muncie, county of Delaware, and State of Indiana, have invented certain new and useful Improvements in Roller-skates, of which the following is a specification.

The principal object of my said invention is to produce a roller-skate which shall have but a single wheel at each end, which shall have all the advantages in the way of elasticity and adaptability to the service required that the best double-wheeled skates have, while avoiding a considerable portion of the friction and wear of such skates and reducing the cost of manufacturing them.

A further object is to improve the construction of the fastening devices whereby the skate is secured to the foot.

My said invention consists, therefore, of a roller-skate having the peculiarities of construction hereinafter particularly described and claimed, whereby the before mentioned objects are accomplished.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a top or plan view of a skate embodying my said improvements; Fig. 2, a side elevation of the same; Fig. 3, a longitudinal vertical section on the dotted line *zz*; and Fig. 4, an under side plan thereof, one of the wheels being removed in order to show the wheel-frame, its pivot-shaft, and the wheel-axle more plainly.

In said drawings, the portions marked A represent the foot-piece of the skate; B, the wheels; C, the axle; D, the wheel-frames; E, the pivot-shafts for said frames; F, brackets attached to the foot-piece A, containing bearings for said shafts; G, pieces of rubber interposed between said wheel-frames and said brackets; H, preferably metallic heel-pieces; I, straps attached thereto; J, clamps to secure the front part of the foot to the skate; K, screws for operating said clamps, and L metallic portions in which are bearings for said clamps and said screws.

I will now proceed to describe the peculiar features of my said invention.

As will be seen, there is but one wheel B at each end of the skate; but these wheels are considerably broader on the face than those

commonly employed. This gives a better bearing on the floor than two single wheels, besides reducing the number of wheel-edges liable to catch on irregularities in the floor-surface just one-half, and, because of the greater width of the wheels, the actual danger in a still greater proportion. By the peculiar construction and mounting of the wheel-frames D all the elasticity and "scientific" attributes of the double roller skates are secured in the form shown.

The brackets F are, as will be noticed, continuous from a point about vertically above the wheel-shaft to about horizontally-opposite the same, with a bearing-shaft, E, running diagonally across from one point to the other, on which the wheel-frame rests. This shaft is exactly central to the breadth of the wheel, and the wheel-shaft is in such relation thereto that the bearing force comes squarely upon its bearings, whereby the amount of friction produced in running the skate is reduced to a minimum.

A piece of rubber, G, is interposed between the wheel-frames D and the brackets F for the usual purpose of righting the skate-foot when tilted over and of preventing any except an enforced rocking or tilting movement of the wheels and wheel-frames.

The heel-pieces H are simply pieces of sheet metal suitably formed and attached to the heel of the foot-pieces A, as shown, and take the place of the more expensive combined metal and leather heel-piece which is commonly used. It has a lip, *h*, which is turned over and clinched upon the strap I, as is most plainly shown in Fig. 3, which forms all the fastening necessary for said strap.

The clamps J are pivoted at *j* to the metal portion L, and pass horizontally through said piece at *l*. The upwardly-projecting portions of these clamps are operated to grip the sole of the skater's boot or shoe by the screws K, which pass through screw-bearings *k* on the metal piece L. This forms a very simple and reliable fastening.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate having two wheels only, rocking or oscillating bearings, the bearing-shafts being located centrally above said wheels

and running from a point about vertically above the wheel-shafts on an angle toward the floor, substantially as shown and specified.

5 2. The combination, in a roller-skate, of the brackets F, the shafts E, the wheel-frames D, the single wheels B, and the wheel-shafts C, said several parts being arranged and operating substantially as shown and specified.

10 3. The combination, with a skate, of the heel-piece H, having turned-over lip *h*, and the strap I, said lip being clinched down upon said strap, which is thus secured, substantially as set forth.

4. The combination, with a skate, of the sole-clamps J, pivoted at *j*, and the screws K, whereby said clamps are operated, substantially as 15 set forth.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 11th day of March, A. D. 1882.

THADDEUS A. NEELY. [L. S.]

In presence of—

C. BRADFORD,

CHAS. L. THURBER.

(Model.)

F. A. COMBES.

ROLLER SKATE.

No. 260,455.

Patented July 4, 1882.

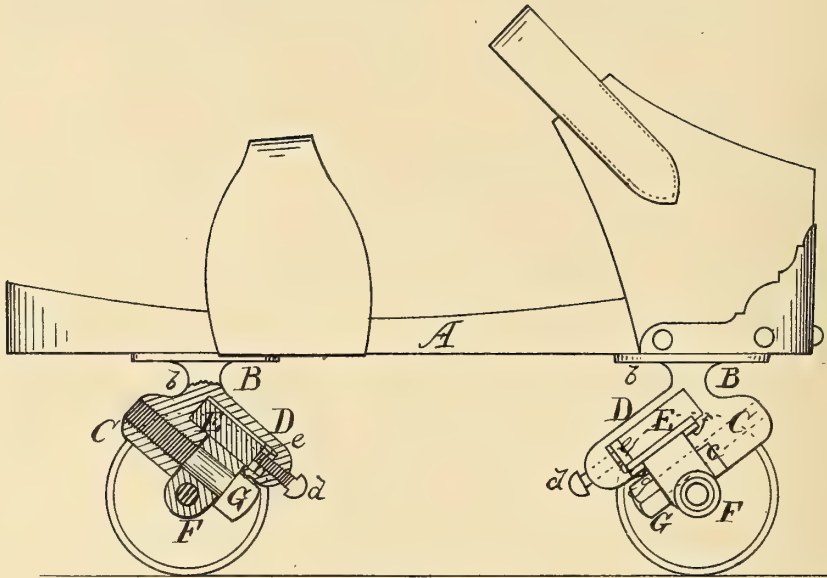


Fig. 1.

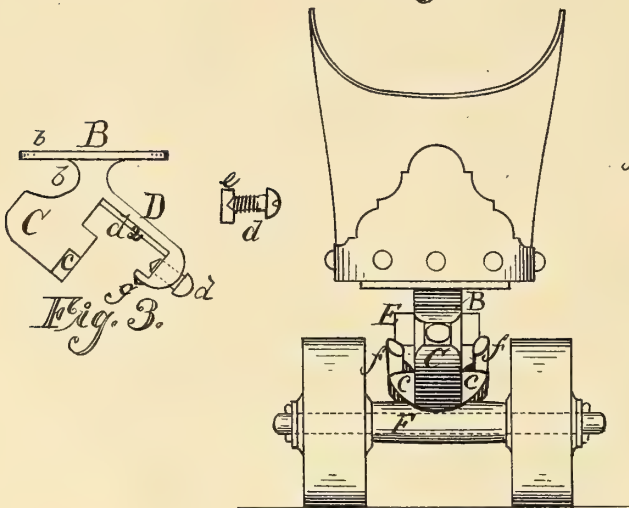


Fig. 2.

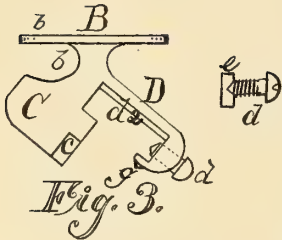


Fig. 3.

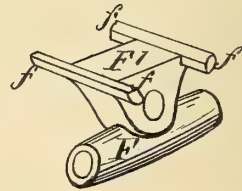


Fig. 4.

Witness,
C. E. Shattuck
M. B. Norton

Inventor,
Frank A. Combes
By Geo. W. Gibbitt, Atty

UNITED STATES PATENT OFFICE.

FRANK A. COMBES, OF CLEVELAND, OHIO, ASSIGNOR TO CHARLES EUGENE SHATTUCK, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 260,455, dated July 4, 1882.

Application filed February 10, 1882. (Model.)

To all whom it may concern:

Be it known that I, FRANK A. COMBES, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

The nature and objects of these improvements will fully appear from the subjoined description, when considered in connection with the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is an end elevation. Fig. 3 is a detached view of the roller-bracket. Fig. 4 is a detached view of the axle and its connecting part to the said bracket.

A is the foot-rest, to which the roller-brackets B are secured. The brackets consist of plates *b* for securing same to the foot-piece, a diagonal arm, C, forming a support for the axle, and an arm, D, containing a mortise or slot for holding a rubber spring or cushion, E, said arm having a set-screw, *d*, for holding and regulating the tension of the spring, the screw *d* pressing against a bearing-plate, *e*, located between it and the rubber.

F is a hollow axle, having a socket, F', through which the bolt G passes for securing the axle to the arm C. The said bolt forms the journal upon which the axle and socket turn in their lateral or tilting motion. The said socket is provided on its upper side with flanges extending above the surface, and also extending beyond or over the front and rear sides, forming arms *ff*, which serve as stops in the tilting movements of the foot-rest over the axle, the aforesaid arm C having projections *c c* on each side, against which the arms strike, thus limiting the tilting movement.

A central rib, *d*², is made on the under side of the arm D for holding and preventing the slipping of the rubber when pressed upon by the tilting of the socket. The under side of the arm D also has a slight projection, *g*, which serves as a lock to the bolt G to prevent its becoming loose. In turning up the bolt the

angles of the head of the bolt bear against the said projection *g*, the arm D springing sufficiently to allow the bolt to be turned. The set-screw *d* may be located at *b* at the other side of the spring E, if desired. Making the bracket B with one arm only for the bolt G admits of the turning up of the bolt in case of wear and the socket becoming loose. Casting the axle F hollow saves the labor of drilling for the journals of the roller, the journals consisting of a steel wire secured in the casting, or allowed to turn therein, if desired.

One of the advantages of this construction is that the axle may be reversed, changing the rollers from one side to the other. In rink-skating the course is around to the right. Consequently the rollers become worn on the side toward the center of movement, or the left side, by constant use, and may be reversed by this method.

Having described my invention, I claim as follows:

1. The bracket B, having the diagonal arm C, having the stop-projections *c c*, and the arm D, adapted to hold the axle and spring, as shown and described.

2. The combination, with the arm D, of the set-screw *d* and plate *e* for regulating the tension of the spring E, substantially as described.

3. In combination with the bolt G, the projection *e* on the arm D, whereby the bolt is locked, as and for the purpose set forth.

4. The combination, substantially as described, of the bracket B, having the diagonal arm C, with its stop-projections *c c*, the arm D, having the set-screw *d* and the rib *d*² and projection *e*, the rubber spring E, the axle F, having the socket F', provided with the flanges and arms *ff*, and the bolt G, constructed to operate as and for the purpose set forth.

FRANK A. COMBES.

Witnesses:

C. E. SHATTUCK,

M. G. NORTON.

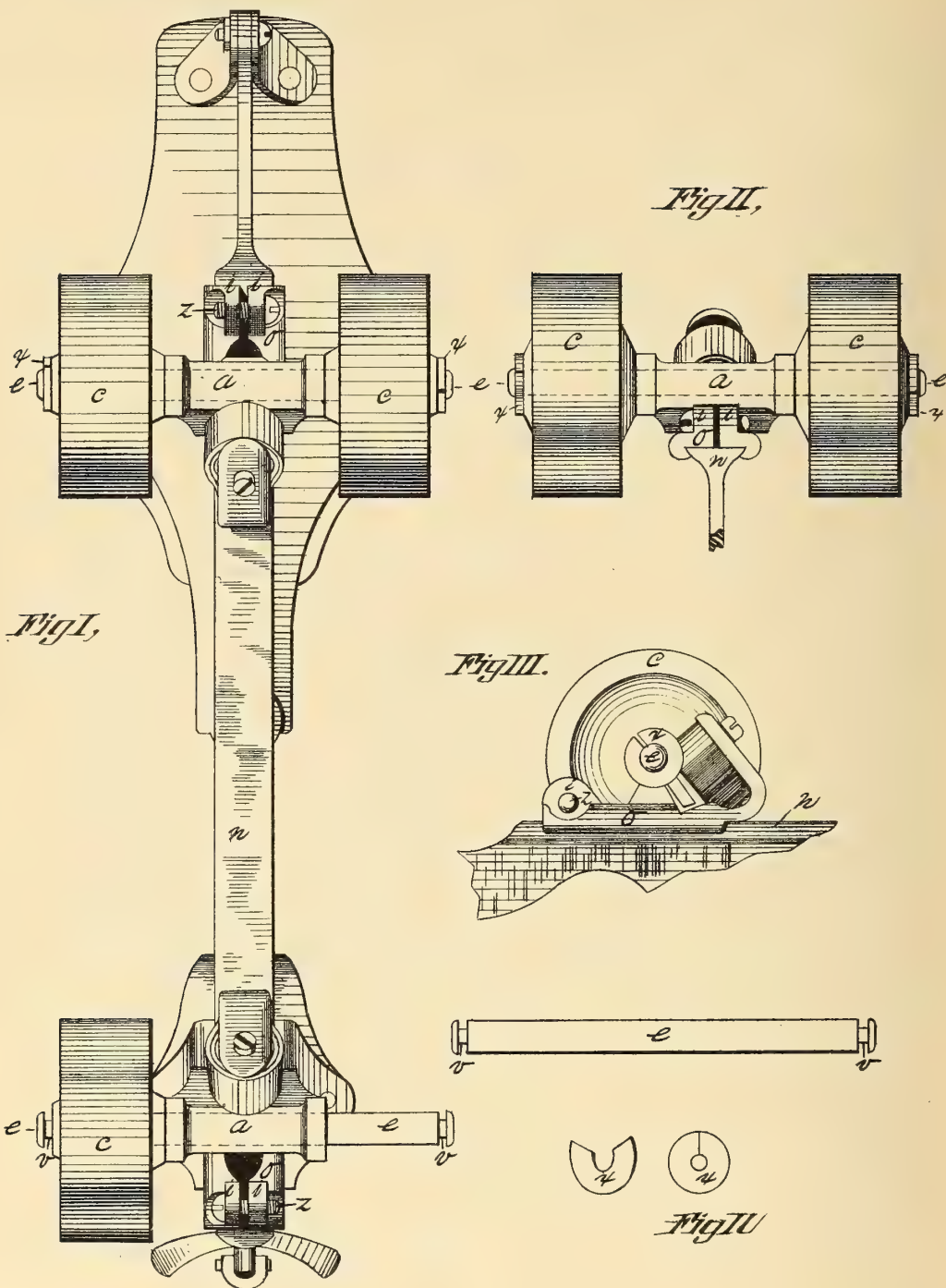
(No Model.)

E. H. BARNEY.

ROLLER SKATE.

No. 265,371.

Patented Oct. 3, 1882.



Witnesses,
R. J. Hyde
W. O. Chapin.

Inventor,
Everett H. Barney
By Henry A. Chapin atty

UNITED STATES PATENT OFFICE.

EVERETT H. BARNEY, OF SPRINGFIELD, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 265,371, dated October 3, 1882.

Application filed July 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, EVERETT H. BARNEY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

This invention relates to improvements in the construction of roller-skates; and it consists of an improved metallic frame and means for securing the wheel-trucks thereon, and of an improved axle for such skates, the object being to provide for skates of this class greater facilities than have heretofore been enjoyed for moving either wheel-truck to different positions on the frame and for easily disengaging said truck from the frame, and for resecuring it thereto, and to provide improved means for securing the rollers to the axles, whereby any distortion of the latter by riveting is avoided, and all danger of catching the clothes of the wearer on the roller-fastenings is obviated.

In the drawings forming part of this specification, Figure 1 is a plan view of the under side of a roller-skate embodying my improvements, from which one roller and the roller-fastenings of the rear axle are removed. Fig. 2 illustrates one of the wheel-trucks of the skate and a portion of the frame. Fig. 3 is a side view of a section of the frame and of the truck, from which the rear wheel or roller is removed. Fig. 4 illustrates the axle and its roller-fastenings.

In the drawings, *n* is the longitudinal skate-frame, upon which the sole and heel plates are supported, and its lower edge is of a wide dovetail form, as seen in Fig. 2. The wheel-truck *o* is adapted to support the axle-case *a* and other operative parts directly connected therewith, and its upper side is provided with a dovetail groove to fit onto said frame. The longitudinal portion of said truck which comes directly in contact with the frame *n* is divided for a portion of its length from one end, and at the latter point thereon, upon each side of the dividing-slot therein, is a flange, *i*. A clamp-screw, *z*, passes freely through one of said flanges and screws into the other. When the truck is placed on frame *n* the screw *z* is turned back to let the divided end of the truck spring

open, and when it is properly located on the frame said screw is turned in to draw flanges *i i* toward each other and to clamp the divided portions of the truck firmly against the edges of frame *n*, whereby said truck is rigidly secured to the latter. The frame *n* being of uniform shape from front to rear, it will be seen that either truck of the skate may be adjusted to such position thereon as may best suit the wearer, the said divided construction of one end of the truck and the clamp-screw *z* affording every needed facility for unfastening and fastening the truck.

The ordinary methods of securing the rollers *c* to the axles of roller-skates as practiced heretofore have been attended with inconveniences to both manufacturer and user, for when, as is generally done, a head is formed on the end of the axle by which to secure the roller thereto, by putting a washer upon the end thereof and upsetting or riveting the end of the axle to secure the washer, the axle within the roller becomes so expanded as to interfere with the free rotation of the latter, and when a bent wire pin through the end of the axle is employed to secure the roller it becomes a source of frequent annoyance to the skater, owing to the facilities it affords for becoming caught in the clothing of the latter.

To obviate the above-named inconveniences, the axles *e* of this skate are provided with the hereinafter-described improved roller-fastening. Said axle *e* is of cylindrical form, and is adapted to pass through and be supported by the transverse axle-case *a* on the truck *o*, between the ends of which and the ends of said axle the rollers *c* are secured. The axle *e* is provided with two grooves, *v v*, cut around it near its ends, and the rollers are secured thereon by the split washer *x*, which is made sufficiently open to be placed upon the axle within groove *v*, and then with a proper instrument it is bent so that its straight edges meet, or nearly so, as shown in the several figures, and thereby said washer is firmly secured to the axle and forms a roller-fastening, which leaves the axle itself in good condition and leaves a smooth exterior finish outside of the roller, which is unobjectionable. Said washer *x* may be easily removed from the axle by again

spreading it, so that it will come out from the groove *v*.

What I claim as my invention is—

1. In a roller-skate, the combination, with
5 the frame *n*, of the semi-divided truck *o*, and
of a suitable clamp-screw, substantially as and
for the purpose set forth.

2. In a roller-skate, the hereinbefore-de-

scribed roller-fastening, consisting of the axle
e, provided with the grooves *v v*, and the split 10
washers *x*, adapted to be secured in said
grooves, substantially as set forth.

EVERETT H. BARNEY.

Witnesses:

H. A. CHAPIN,

U. O. CHAPIN.

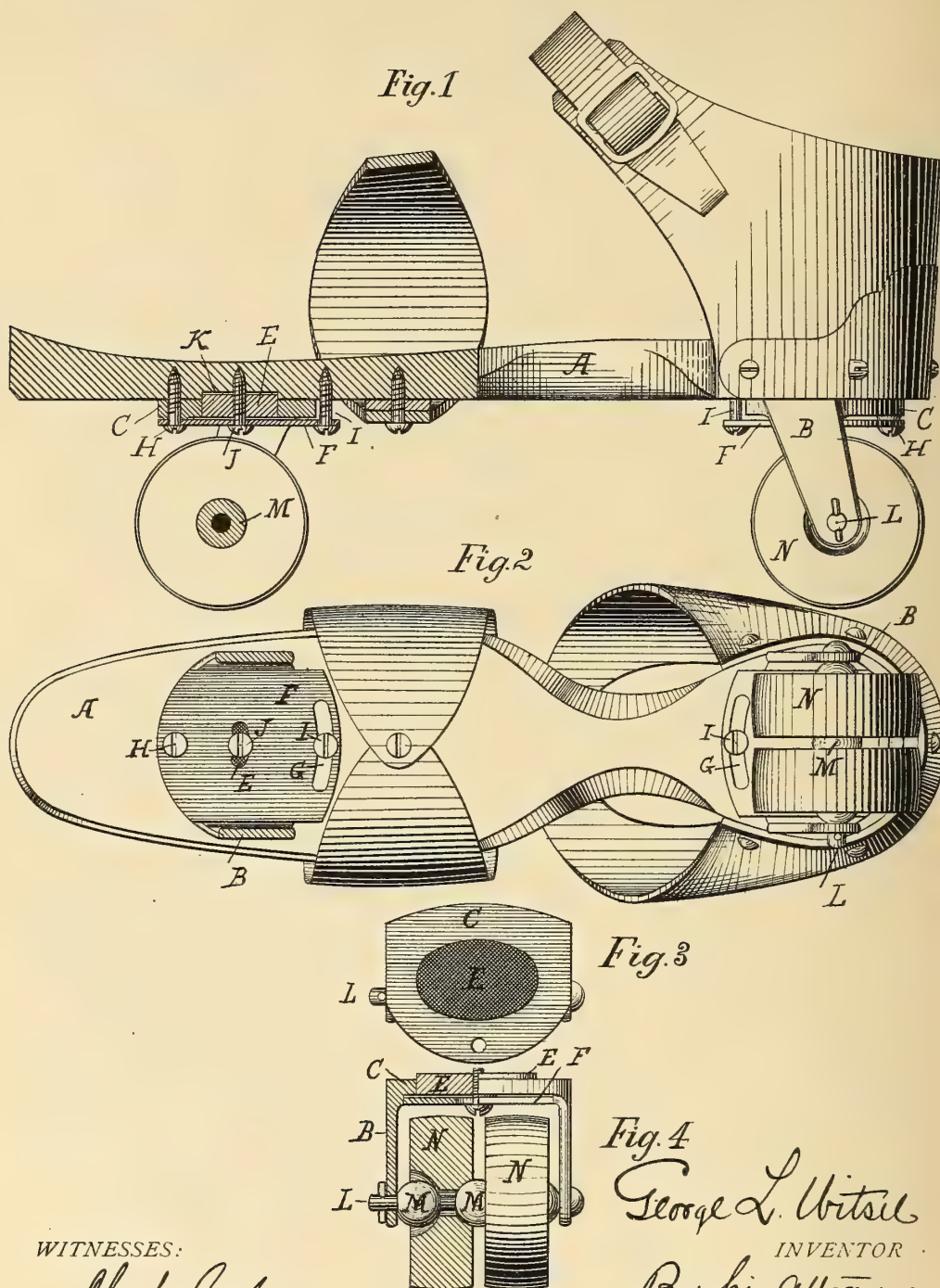
(Model.)

G. L. WITSIL.

ROLLER SKATE.

No. 266,002.

Patented Oct. 17, 1882.



WITNESSES:

Clark Fisher
John D. Kelley

George L. Witsil
INVENTOR

By his Attorneys,
W. C. Mawhood
Benson Taylor.

UNITED STATES PATENT OFFICE.

GEORGE L. WITSIL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
SAMUEL G. PAPE AND ALBION FOULDS, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 266,002, dated October 17, 1882.

Application filed January 28, 1882. (Model.)

To all whom it may concern:

Be it known that I, GEORGE L. WITSIL, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Roller-Skates, of which the following is a specification.

My invention embodies certain improvements in the application of the rollers to the foot-stock of a roller-skate of such character as to enable the skater to make sharp turns and to aid in giving a very perfect lateral throw to the foot-stock with respect to the rollers.

The improvements are hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents in side elevation a skate embodying my improvements, the front roller-truck being centrally sectioned in a vertical longitudinal plane. Fig. 2 is a bottom plan view of the same, the depending brackets of the front roller-truck being horizontally sectioned close to the base-plate and the front rollers being removed. Fig. 3 is a top plan view of one of the trucks, showing the rubber cushion; and Fig. 4 is a rear view, partially in section and partially in elevation, of a truck embodying my improvements.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the foot-stock of the skate, which is of any suitable material and construction.

There are, as usual, two trucks, which I make precisely alike. The description hereinafter given relates to but one of them.

B are the depending brackets of the truck, which branch downward from its base-plate C and carry the axle. This base-plate of the truck is centrally provided with an elliptical or other shaped opening, D, adapted to contain a rubber cushion, E, fitted therein and bearing against and partially mortised into the under surface of the foot-stock.

F is a truck guard-plate, fitted against the under surface of the base-plate of the truck between its depending brackets, the office of which is to incase and hold in place the rubber cushion, and also, as hereinafter explained,

to provide means for limiting the lateral throw of the truck about its pivot. This plate is of greater length than the length of the base-plate of the truck, and it extends beyond said base-plate toward the center of the foot-stock, and as to such extended portion is provided with an arc-shaped guard-slot, G, which is clear of the base-plate of the truck.

Each truck is pivoted upon a pivot, H, fixed in the foot-stock and located centrally of the base plate and at that end of the same which is farthest from the center of the foot-stock.

I is a guard-stud entered through the guard-slot G and fastened in the under surface of the foot-stock. This guard-stud limits the lateral throw of the truck.

J is a supplemental guard-stud, entered through the guard-plate and passing through the rubber cushion into the foot-stock. It is a device auxiliary to the guard-stud I, and which may, if desired, be dispensed with.

Such being the method of construction and application of the trucks to the foot-stock, it is obvious that each truck is capable of a limited lateral movement about its pivot and with respect to the foot-stock, such movements being of advantage in the use of a roller-skate, as is well understood in their manufacture.

The cushion serves not only as a cushioning device against the weight of the skater upon the foot-stock, but also, by virtue of its embrace within the opening in the base-plate of the truck and in the recess or mortised seat K cut for it in the under face of the foot-stock, serves to limit the lateral throw of the truck, and also to return said truck after its deflection to either side to a central position with respect to the foot-stock.

Transversely fitted between the lower extremities of the depending brackets of the trucks is an axle, L, which is adapted to be provided with three or more spherical balls, M, of metal, glass, or other fit material, which are designed to afford a ball-and-socket attachment, so to speak, for the rollers N of the skate. Two of these rollers are applied to the axle of each truck, and are so reamed out from their opposite faces toward their centers upon the line of their axial openings that they fit around

the balls, so to speak, and are hung or suspended thereupon and upon the axle, so as to be capable not only of a motion of revolution, but of an eccentric motion with respect to the axle and truck. The rollers revolve upon the balls and the balls revolve upon the axle, the entire device together enabling a compound swivel or gimbal movement, so to speak. It is essential that three balls at least should be employed, although when it is desired to separate the rollers to an exceptional width, as in making large sizes of skates, more than two balls may be applied centrally upon the axle between the rollers.

I have represented screws in the drawings as a means of attaching the various parts of the trucks to the foot-stock. I may, however, dispense with the screws and employ pins in lieu thereof.

A metallic plate may be applied to the foot-stock to prevent wear of the wood in the action of the lateral throw of the truck. Washers may be applied to lessen friction, if desired.

Having thus described my invention, it will be understood that the foot-stock rests upon springs, the rubber cushion acting in such capacity while likewise serving to regulate the amount of lateral vibration and to control and steady the lateral throw.

From the foregoing relationship of parts results the advantage that each truck is separately so adjusted as to be capable of independent movements irrespective of the other truck, whereby my roller-skate is adapted to accommo-

date itself without jar to the user and without noise to irregular floors, pavements, or the like.

This skate is well adapted for use in the turning of sharp curves, while its construction lessens the chances of breaking strains upon the trucks.

I do not confine myself to the exact form of detailed parts shown, as it is obvious that many formal changes can be made by a skilled mechanic without departure from the essential features of my invention.

Having thus described my invention, I claim—

1. In combination with the axle of a roller-truck, two rollers and three revolving balls placed respectively between and exterior to the rollers, as and for the purpose specified.

2. In combination with a truck which is pivoted to the foot-stock of a roller-skate, a rubber cushion partially seated in a recess in the under surface of the foot-stock and in a recess in the truck, substantially as and for the purposes described.

3. In a roller-skate, two rollers reamed out on both sides of their hollow axes, in combination with three anti-friction balls mounted upon the axle of said rollers, as and for the purposes set forth.

In testimony whereof I have hereunto signed my name this 20th day of January, A. D. 1882.

GEO. L. WITSIL.

In presence of—

J. BONSALE TAYLOR,
W. C. STRAWBRIDGE.

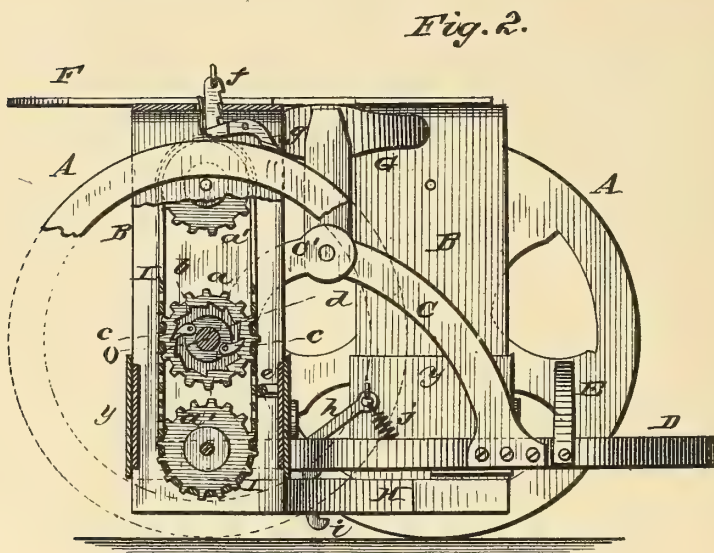
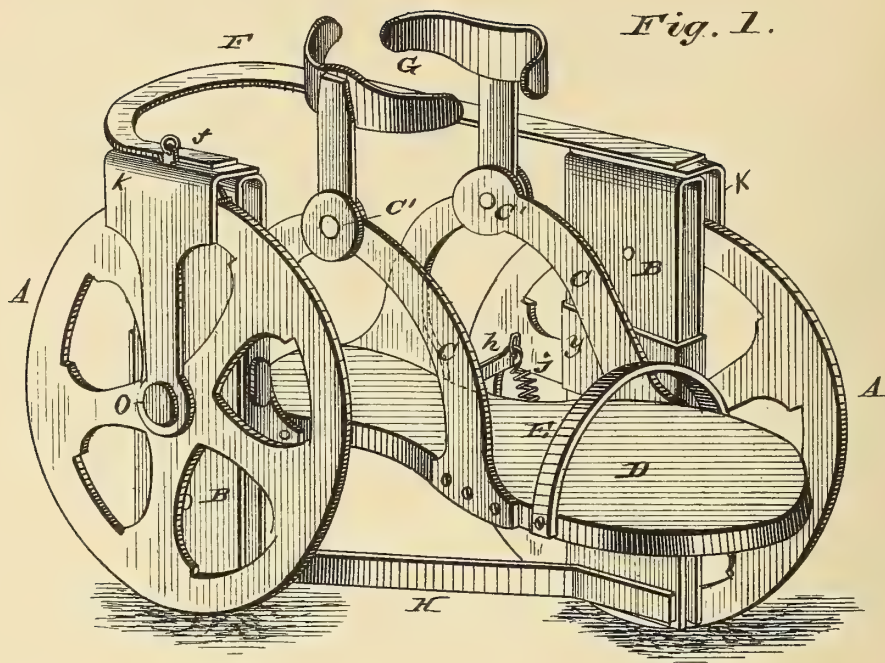
(No Model.)

N. W DARROW.

WHEEL SKATE.

No. 266,978.

Patented Nov. 7, 1882.



WITNESSES:

Fred. L. Dietrich
F. C. Dietrich

INVENTOR.

Norman W. Darrow

ATTORNEYS.

UNITED STATES PATENT OFFICE.

NORMAN W. DARROW, OF KANSAS CITY, MISSOURI.

WHEEL-SKATE.

SPECIFICATION forming part of Letters Patent No. 266,978, dated November 7, 1882.

Application filed April 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, NORMAN W. DARROW, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented new and useful Improvements in Wheel-Skates.

The nature of my invention consists in providing wheel-skates with mechanism so arranged as to move the wheels by the gravity of the operator. The shaft or axle of each wheel is provided with a spur-wheel, over which passes an endless chain, so attached to the foot-rest that by the weight of the operator the desired motion is obtained.

The mechanism of my invention is fully explained in the following specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical perspective view of the entire plan. Fig. 2 is a vertical section, showing the mechanism and connections of the various parts.

Similar letters refer to similar parts throughout the several views.

In constructing my skates I use two wheels, one on each side of the foot-rest. (Shown in Fig. 1, A A, also in Fig. 2.) I form a case, B, for each wheel A, in which the spur-wheels *a a'* are incased, and have their axle-bearings in the plates forming the case B. (Shown in Fig. 2.) The spur-wheel *a'* may be firmly attached to the axle, or work loosely thereon. The spur-wheel *a*, of which the ratchet *b* forms a part, turns loosely on its axle. The plate *d*, supporting the pawls *c c*, is firmly attached to the axle or shaft, which passes through *a*, case B, and wheel A. Wheels A A are each firmly attached to its axle O. An endless chain, I, surrounding the spur-wheels *a a'*, is attached at *e* to a sliding plate, *y*, so connected to case B as to move freely up and down. (Shown in Fig. 2.) The sliding plate *y* is firmly attached to the foot-rest D. The cases B B stand in a vertical position between the foot-rest D and wheels A A, and are supported by the axles of A A. The cases B B are held in position by the brace H at the bottom and the brace F at the top. (Shown in the drawings.) The foot-rest D is provided with supporting-braces

C C, one on each side of the foot. Braces C C are provided with leg-braces G, and have working-joints C', to correspond to the motion of the ankle-joint. Braces G may be held to the legs by straps or other suitable means.

Plates K K, attached to cases B B at the top, serve as bearings for axles O O and support for wheels A A, Fig. 1. E is a strap to hold the foot in connection with the rest D.

Attached to the foot-rest D is the catch *i*, used, when desirable, in descending an inclined surface. By drawing a wire or any suitable attachment to the lever *h* the catch *i* is brought under the brace H and holds the foot-rest down at will of the operator. When desirable to let loose the catch *i* the tension upon the wire or cord is slackened, and spring *j* causes *i* to loose its hold on H. The wheels A A are supplied with a brake upon each, or only one, as desirable, and used at the will of the operator, (shown at *f* in Figs. 1 and 2.) By using a dog in place of attachment at *e*, I accomplish the same motion of the wheels and chain. The dog at *e* will cling to the chain and move it down with the descent of the foot; but when the foot rises the dog slacks its hold and rises with D, ready to cling to I when D begins to descend.

In the place of spur-wheels *a'* in Fig. 2, rollers may be used.

The endless chain may be made of any suitable material.

I am aware that there are skates made to move by a rocking motion of the foot-rest, provided with ratch-connection to wheel. My skates are propelled by the endless chains passing over and in contact with spur-wheels, connected with axles of the wheels, and foot-rests connected with endless chains, all acted on by the weight and method of foot-lifting by the operator.

Having thus fully explained the construction and working of my invention, what I claim, and desire Letters Patent for, is—

1. The foot-rest of wheel-skates, when so constructed that the entire rest is raised up by the foot and forced down by the gravity or weight of the operator, as described, and for the purpose set forth.

2. The endless chain, in combination with the foot-rest of wheel-skates, as described, and for the purpose set forth.

3. The pawls, ratch, and spur-wheel *a*, in
5 combination with the endless chain and foot-rest, as herein described, and for the purpose set forth.

4. In combination with the foot-rest, the sliding plate, as described, and for the purpose set forth.

NORMAN W. DARROW.

Witnesses:

SAMUEL HUFFMAN,
MARVIN J. HORTON.

(No Model.)

G. D. BURTON.

ROLLER SKATE.

No. 271,785.

Patented Feb. 6, 1883.

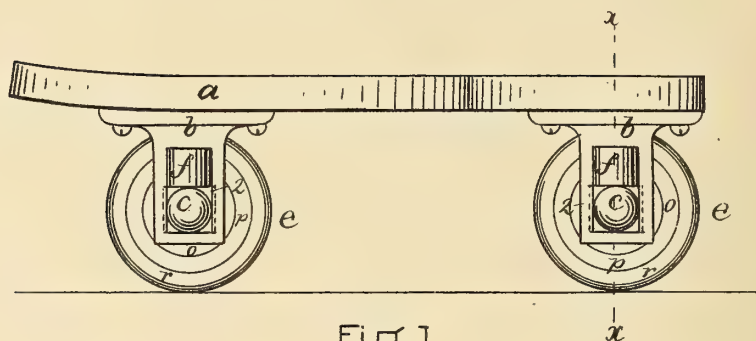


Fig. 1.

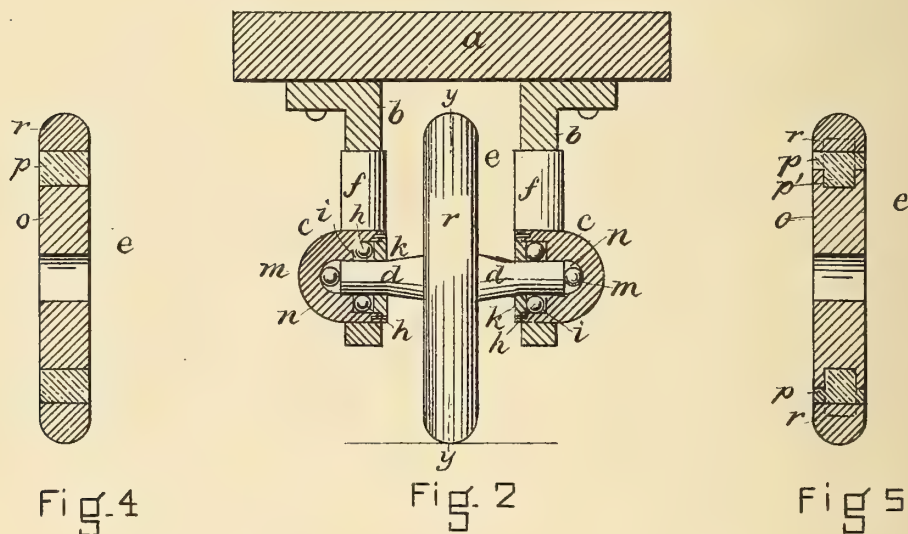


Fig. 4

Fig. 2

Fig. 5

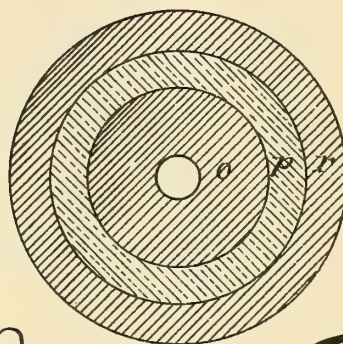


Fig. 3

WITNESSES.

Chester Mann Jr
C. W. Park

INVENTOR

G. D. Burton

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF NEW IPSWICH, NEW HAMPSHIRE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 271,785, dated February 6, 1883.

Application filed November 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, of New Ipswich, county of Hillsborough, State of New Hampshire, have invented an Improvement in Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relating to roller-skates is embodied in a skate having but two rollers—one at the forward and the other at the rear portion of the skate—the said rollers being in line with one another and having their axis of rotation fixed relative to the body of the skate. The axles of the rollers have bearings in bearing-boxes fitted to slide vertically in bearing-pedestals connected with the body or sole portion of the skate, suitable springs being interposed between the said bearings and the body of the skate to absorb the jar and prevent it from being transmitted to the skater. The axles of the rollers bear upon a series of balls held in an annular chamber within the bearing-boxes, the said boxes having recesses at the ends of the roller-axle, in which additional balls are placed to receive the end-pressure on the axles when the skate is inclined from the vertical position. The rollers have a central or hub portion preferably made of wood, and surrounded by a band of soft rubber, which is itself inclosed in the tire of the roller, which is preferably of iron or steel, and rounded, so as to permit the inclination of the skate when in use. The rubber band between the central portion of the roller and its tire is normally under a considerable compression, and affords an elastic cushion to partially absorb the jar incurred when the skate passes over a rough or uneven surface.

Figure 1 is a side elevation of a roller-skate embodying this invention; Fig. 2, a transverse section thereof on line *xx* on a larger scale; Fig. 3, a central longitudinal section of the roller on line *yy*, Fig. 2; Fig. 4, a transverse section thereof, and Fig. 5 a transverse section of a modified form of roller in which the central portion of the roller is recessed to receive a corresponding projecting portion of the rubber band.

The body *a* of the skate, of any suitable or usual construction adapted to be attached to the foot in any usual manner, is provided with

bearing-pedestals *b*, having a passage or slot, 2, which receives and forms a guide for the bearing-boxes *c* of the axles *d* of the rollers *e*, two only of which are employed on each skate. Springs or cushions *f* are placed in the guides of the pedestals *b* above the bearing-boxes *c*, they serving to prevent the transmission of shocks upon the rollers *e* to the wearer of the skate. The axles *d* of the rollers are surrounded by and bear upon a series of balls, *h*, in an annular recess, *i*, in the boxes *c*, the said balls being kept in place by caps *k*, attached to the said boxes *c*. The ends of the shaft *d* rest in contact with balls *m*, placed in suitable chambers, *n*, in the boxes *c*, the said balls constituting pivots for receiving the end-pressure brought upon the axle *d* when the skate is in an inclined position.

The rollers *e* consist of a central portion, *o*, fixed upon the axle *d*, preferably made of wood, it being surrounded by a band, *p*, of soft rubber, upon which is placed the tire or rim *r*, preferably made of iron, and rounded, as shown, so as to bear equally well when the skate is in an inclined or vertical position. The band of rubber *p* will be under great compression, so that the adhesion and friction between its surface and that of the parts *p r* of the roller will be sufficient to secure the said parts together; but, if desired, the said band may have an annular projection, *p'*, as shown at Fig. 5, entering a corresponding recess in the portion *e* of the roller, and a similar projection might be made to enter a similar recess in the tire *r*, as shown in dotted lines, Fig. 5.

I do not herein claim the means employed for connecting the rollers with the body of the skate, as this matter will be incorporated and claimed in another application for Letters Patent.

I claim—

1. In a roller-skate, the skate-body provided with bearing-pedestals near its ends, combined with the two rollers in line with one another, the bearing-boxes for the said rollers mounted in the said pedestals, and the pivots for receiving the endwise pressure of the axles of the rollers, substantially as described.

2. The skate-body and bearing-pedestals connected therewith, combined with the two rollers in line with one another at the forward and

rear end of the skate, and the bearing-boxes
for the axles of the said roller having an an-
nular chamber surrounding the said axle, and
a chamber at the end of the said axle, and the
5 balls in the said chambers to afford an anti-
friction bearing for the said axle, substantially
as described.

3. In a roller-skate, the combination of the
skate-body, its bearing-pedestals, and bearing-
10 boxes therein, with the two rollers in line with
one another, composed of a central portion, a

band of rubber surrounding it, and a rounded
tire inclosing the said rubber band, substan-
tially as described.

In testimony whereof I have signed my name 15
to this specification in the presence of two sub-
scribing witnesses.

GEO. D. BURTON.

Witnesses:

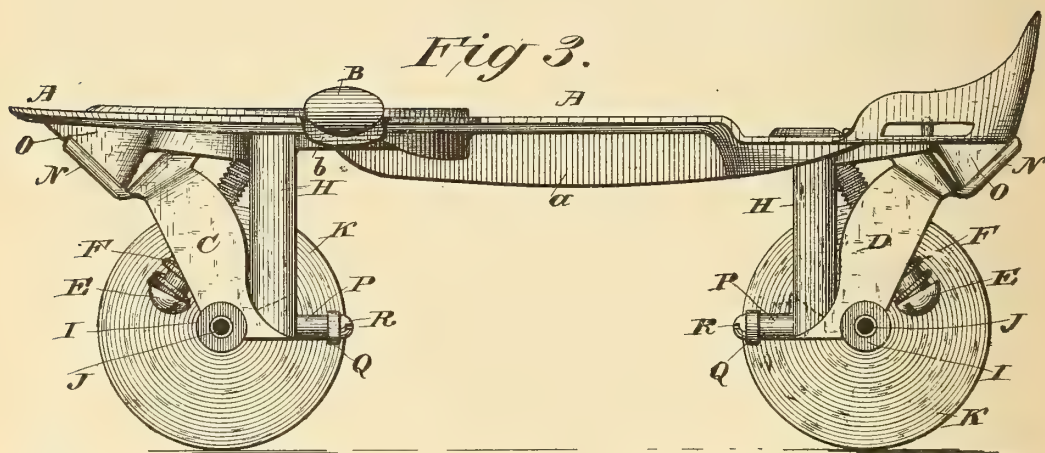
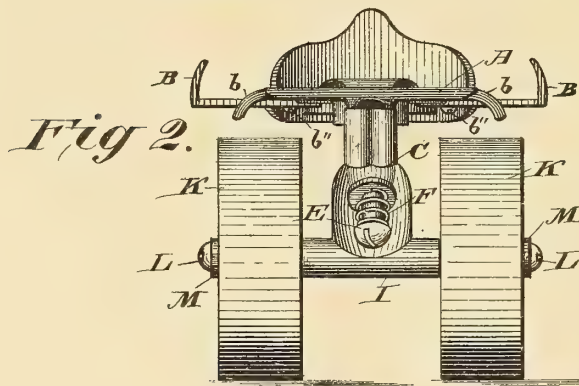
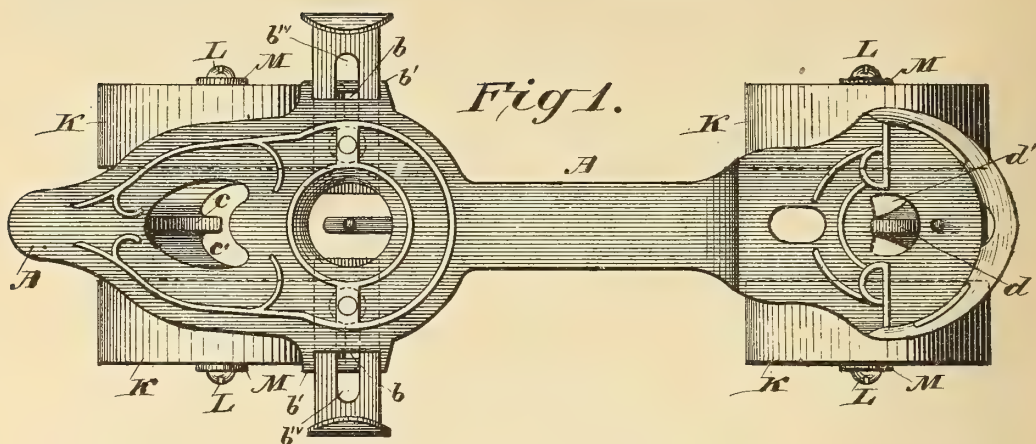
JOS. P. LIVERMORE,
BERNICE J. NOYES.

T. L. MELONE.

ROLLER SKATE.

No. 272,298.

Patented Feb. 13, 1883.



Attest:

Geo. T. Smallwood Jr
L. M. Hopkins.

Inventor:

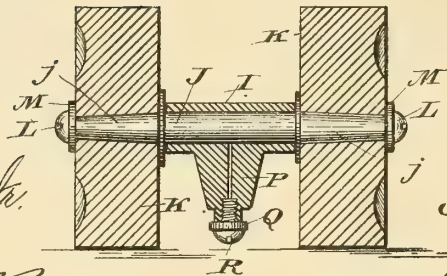
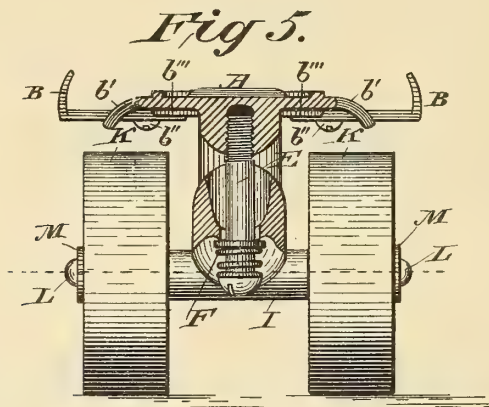
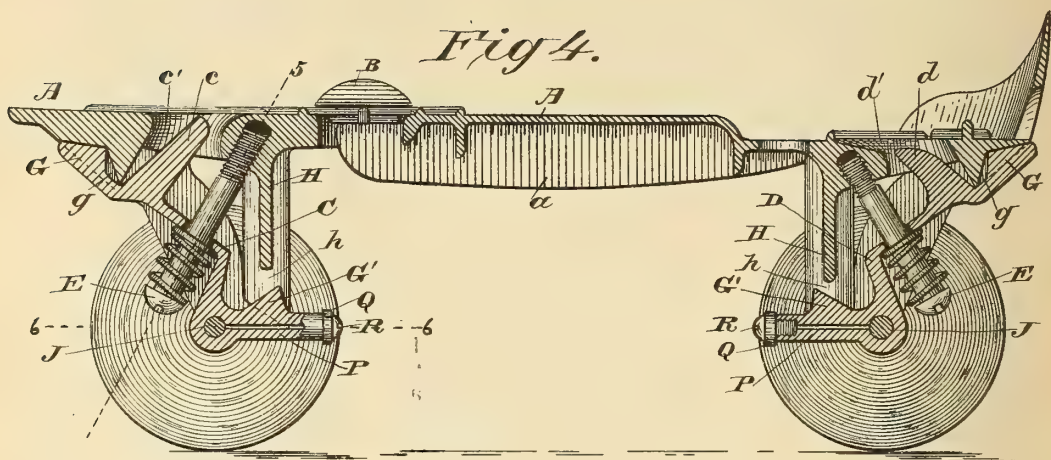
Thomas L. Melone.
124
Knights...

T. L. MELONE.

ROLLER SKATE.

No. 272,298.

Patented Feb. 13, 1883.



Attest:
Geo. T. Smallwood Jr.
J. M. Hopkins.

Inventor:
Thomas L. Melone.
By Knight Bros.
Atty's.

UNITED STATES PATENT OFFICE.

THOMAS L. MELONE, OF CHILLICOTHE, OHIO.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 272,288, dated February 13, 1883.

Application filed June 9, 1882. (Model.)

To all whom it may concern :

Be it known that I, THOMAS L. MELONE, a citizen of the United States, residing at Chillicothe, in the county of Ross and State of Ohio, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to the class of roller-skates in which pressure on either side of the center deflects the rollers from their parallel position, causing the skate to describe a curve to the right or left.

My improved skate has two centers of motion for producing the curves, situated on opposite sides of the skate, and forming a level plane on which the sole-plate rests, as hereinafter described. The sole-plate is preferably of cast metal, with downwardly-projecting lugs or posts, for the reception and bearing of the roller trucks or frames, which may also be of cast metal. The trucks have a yielding connection with the sole-plate in all parts, including the center-line, which is usually attached in fixed contact with the sole-plate. The trucks, when deflected, are restored to their central or parallel position by springs located beneath and bearing on the under surface of the trucks in or near the axis of curving motion. The trucks are secured against slipping longitudinally or laterally by lugs fitting into corresponding notches, which lugs, together with lugs projecting from the top of the respective trucks into cavities in the sole-plate, limit the deflection or curving movement of the rollers. The rollers are fixed to a conical-ended spindle running freely in a central box, lubricated by an oil-cavity in the truck, which is closed by a screw and washer.

In order that the invention may be fully understood, I will proceed to describe it in detail, with reference to the accompanying drawings, in which—

Figure 1 is a plan view; Fig. 2, a front view; Fig. 3, a side elevation; Fig. 4, a longitudinal section; Fig. 5, an oblique transverse section on the line 5 5, Fig. 4. Fig. 6 is a horizontal section on the line 6 6, Fig. 4. Fig. 7 is a side view of the spindle detached.

A represents the sole-plate of the skate, which I prefer to form of cast metal, with a longitudinal strengthening-rib, *a*, at bottom, suitable

loops or apertures, *b*, in the downturned portions or lugs *b'*, for the reception of the toe-clamps B B or suitable straps. The toe-clamps slide in guides *b'''*, and are secured at desired distance apart by screws *b''*, passing through slots *b^{iv}* in the clamps. Apertures *c' d'*, near the toe and heel, receive and permit a moderate lateral play to lugs *c d*, projecting upward from the toe and heel wheel trucks C D. These trucks are also preferably made of cast metal. They are attached to the sole by oblique bolts E, between the head of which and the under surface of the truck is a spring, F, having its bearing in line with the oblique axes of oscillation of the truck, or nearly so.

On the upper face of each truck, being the rear face of the toe and the front face of the heel truck, are teeth or projections G G', fitting in corresponding notches *g h*, the notches *h*, which receive the lower teeth, G', being in the extremities of downwardly-projecting posts H H, which may be cast in one piece with the sole-plate A. The teeth G G' and upwardly-projecting lugs *c d* combine to sustain the trucks against slipping longitudinally or laterally, and to limit the proper lateral deflection of the trucks and rollers for producing curved movement.

The truck is further provided with a central box, I, forming the bearing of the roller-spindles J. These spindles have shoulders *j'*, and are made with conical ends *j*, to receive the rollers K K, which may be fixed thereon so as to rotate together. The conical spindle ends secure the rollers against endwise pressure against the bearings I, which would interfere with their free rotation. The wheels are confined on the spindles by screws L and washers M, the screws entering the ends of the spindle and the washers being jammed against the same by the pressure of the screws and holding the latter against jarring loose.

If preferred, the spindles may be fixed and the wheels adapted to run loosely thereon, bearing against abutting collars on their inner faces; or one wheel may be fixed to the spindle and the other run independently.

A closed oil-cavity, P, is formed within the interior of the truck, communicating with the inside of the bearing I, and closed by a washer, Q, and screw R, so as to confine the oil.

The trucks are also provided at each end

with parallel longitudinal grooves N, for the reception of lugs or flanges O, projecting downward from the base of the sole and from the extremities of the posts H. This provision effectually retains the trucks in their proper position when deflected, and causes them to resume their normal central position in line with each other when released from lateral pressure. These double bearings at each end of the truck, on opposite sides of its longitudinal center, afford a broad support for the sole-plate, rendering the skate stanch and strong, as well as very steady in its movement.

The bearing of the spring F upon the truck being in the axis of oscillation of the latter, besides affording great freedom of motion, completely relieves the attaching-bolt E of lateral or transverse strain. The only stress to which it is subjected is direct tension. From this it will be seen that the only office performed by the bolt and spring is to hold the parts of the skate in contact and prevent them from separating when the foot of the skater is raised.

The parts would remain in proper juxtaposition and perform their several functions equally well without the attaching-bolts E and springs F if the skate were not lifted from the surface, the mechanical construction being such as to effectually prevent the trucks from slipping relatively to the sole-plate. The bolt and spring, as herein described, provide a yielding quality in the center and in the entire truck. This, together with the bearing post and sole lugs or flanges O, on opposite sides of the longitudinal centers of the trucks, while affording the greatest freedom of oscillation, provides at the same time a broad and flat foundation, completely obviating any disposition to wobble, which is so serious a defect in many styles of roller-skates. By these opposite bearings I also provide two centers of motion for shifting the direction of the rollers, the bearings on one or the other side being used alone in curving.

When the skater leans to one side, the bearings on the other side are out of contact, and when both bearings are in contact the rollers are in line, so as to move straight forward. By reason of the broad support provided by the bearings on opposite sides of the longitudinal center, to which the bearings of the trucks are restored instantly by the pressure of the springs F and by the weight of the skater, their tendency is to remain fixed in this position, without inclination to wobble or to swerve to the right or left until the skater voluntarily breaks the contact by shifting his weight to one or the other side of the center as it is desired to curve to the right or left. These bearings may also be provided by continuous flat surfaces, the corners serving as centers of motion to produce the curve; but it is preferred to form them of the lugs or flanges O, as is herein described.

The described construction of skate will be seen to be adapted for the use of rollers of un-

usually large size, the advantages of which in ease and rapidity of movement are self-evident.

Instead of connecting the trucks to the sole-plate by a fixed axis of oscillation on which the trucks must be deflected to the right or left, and thus necessitating the blocking up of each side of the truck with some description of spring, as is the practice with many forms of skates in use, they are so connected that the center moves away from the sole-plate when making a curve, the motion being on an axis on either side of the longitudinal center, as already described.

Without shoulders on the spindle, the bevel has been found insufficient to keep the wheels from crowding up the spindle and against their central bearings on the truck and locking them, the disposition to crowd being greater than anticipated by reason of the twist of the wheels upon the floor, one on each truck twisting forward and the other backward, and screwing them against the end of their central bearings until, as stated, they are locked. The bevel assists in resisting this strain, and, more important, enables the spindle to be driven straight into the hole provided in the wheel to receive it, thus preserving the center. The point of bearing upon which our rollers revolve is the top of the spindle, while in roller-skates as ordinarily built, with the wheels revolving on the spindle, the point on which they revolve is the bottom of the spindle. This gives additional purchase for revolving the wheels equal to the diameter of the spindle, which is equivalent to increasing of the wheel twice the diameter of the spindle.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A roller-skate constructed with bearings on opposite sides of the longitudinal center, forming two axes of oscillation for each of the wheel-trucks, as herein described.

2. A roller-skate consisting of a sole-plate, A, and wheel-trucks C D, without fixed or permanent connection in their longitudinal center.

3. A roller-skate consisting of a sole-plate and wheel-trucks connected thereto by bolts and springs bearing upward underneath the trucks and resting against the bottom thereof in line with the axes of oscillation, or nearly so, substantially as and for the purposes set forth.

4. A truck for roller-skates having a fixed central bearing, I, for the spindle, and an oil-chamber, P, communicating therewith and closed to confine the oil.

5. In a roller-skate, a spindle formed with conical ends for the reception of the rollers, substantially as described.

THOMAS L. MELONE.

Witnesses:

JOHN T. RAPER,
H. W. WOODROW.

(No Model.)

2 Sheets—Sheet 1.

W. P. GREGG.

ROLLER SKATE.

No. 275,482.

Patented Apr. 10, 1883.

FIG. 1.

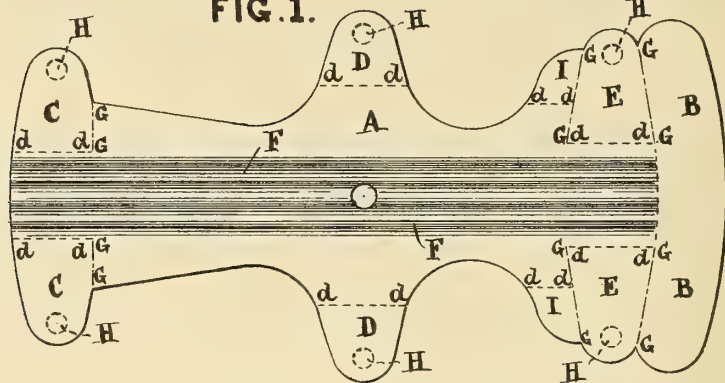


FIG. 2.

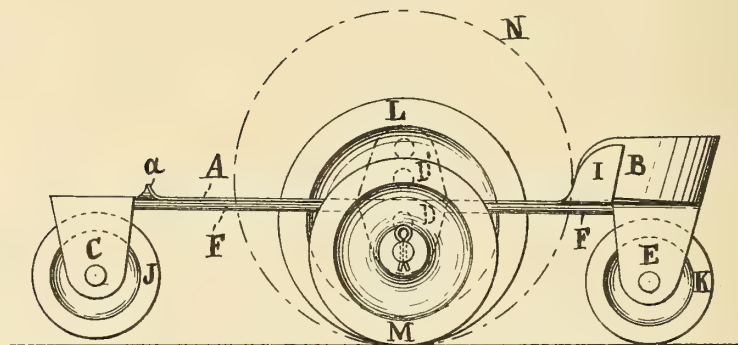


FIG. 3.

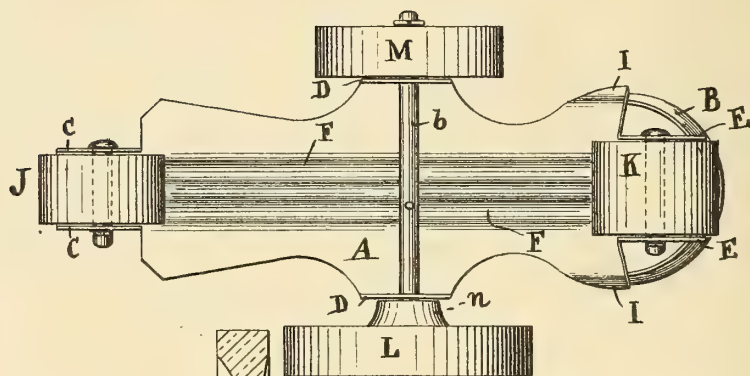
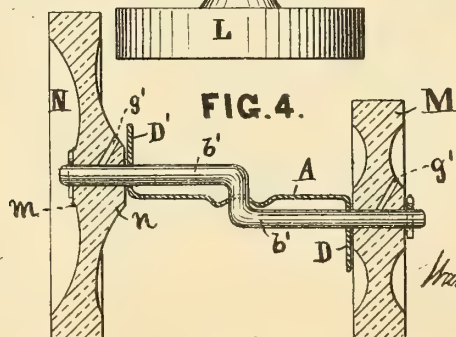


FIG. 4.



Witnesses.

Benj. Hall, Clerk
Geo. O. Ames

Inventor.

Washington Parker Gregg

W. P. GREGG.

ROLLER SKATE.

No. 275,482.

Patented Apr. 10, 1883.

FIG. 5.

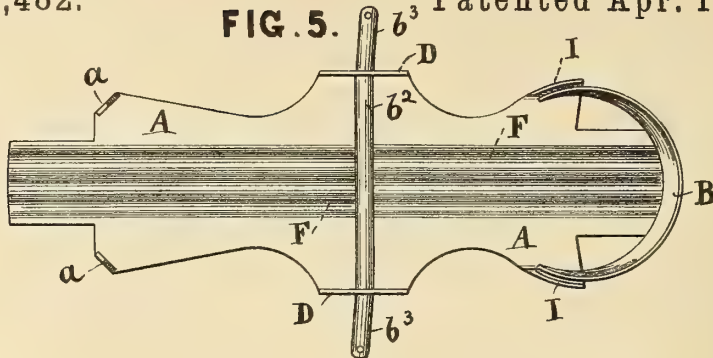


FIG. 7.

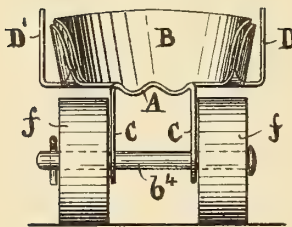


FIG. 8.

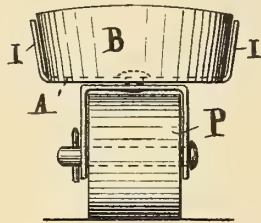


FIG. 9.

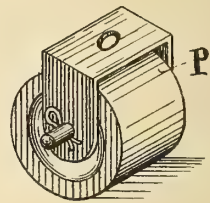


FIG. 6.

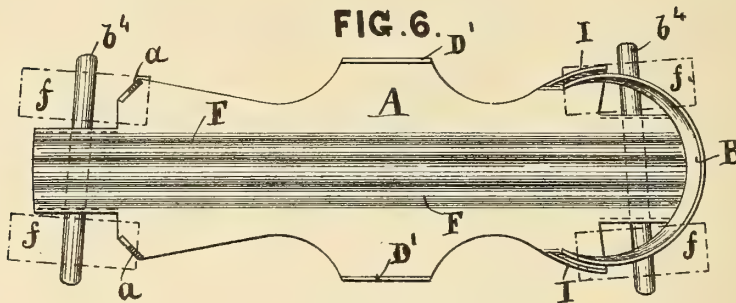


FIG. 10.

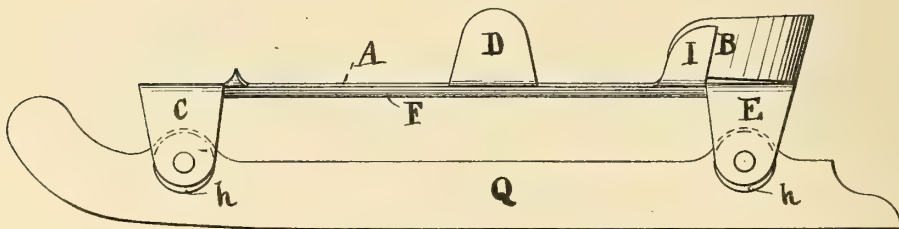
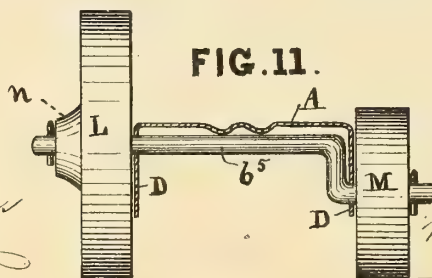


FIG. 11.



Witnesses.

Sam. Hall Currier
Geo. O. Cunn

Inventor.

Washington Parker Gregg

UNITED STATES PATENT OFFICE.

WASHINGTON P. GREGG, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 275,482, dated April 10, 1883.

Application filed July 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON P. GREGG, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification.

Of the nature of my improvements and the manner of constructing and using the same the following is a specification, the accompanying drawings making a part thereof.

My principal purpose is to reduce the cost of making such skates, render them lighter, more durable and pliable, and so that they may be used with greater ease and safety.

Skates have been patented to me whose stocks were made separately, without heel-holders, toe, side, and heel axle holders, which in turn were made each by itself, and afterward fastened, each by itself, to the stocks by screws and rivets.

My present invention consists mainly in a novel construction of the stock, its heel and axle holders, in placing under the heel a roller having a periphery flat and wider than that of the toe-roller, in giving an inclination to the axles, and in side-wheel skates making one end of the heel of the outside driving-wheel longer than its other end, when combined or used with another driving-wheel upon the other side of the stock—not under it, nor having projected hubs—that said wheel may fit close to its side of the stock, said several improvements being designed to be used together or separately, as may be required in skates for middle wheels and end rollers, as well as in skates for toe and heel rollers.

Of the accompanying drawings, embodying my invention, Figure 1 is a top view of the skate-stock blank A, stamped into shape from homogeneous sheet-steel. The dotted lines from G to G indicate slits to be made to form the heel and axle holders, and dotted lines from d to d where they are to be bent at right angles, H H where axle-holes, and F F where corrugations, are to be. Fig. 2 is a side view of said skate-stock corrugated, and with its heel-holder B and axle-holders C D E formed and made from such steel or other suitable sheet metal, with one small roller, J, under its toe and another small roller, K, under its heel, and with its large driving-wheel, L, on one side

and its smaller driving-wheel, M, upon the other side of the stock; also, a view of the edges turned up at a and I, and in dotted lines its outside axle-holders, D', bent up, when required, for a larger driving-wheel, N. Fig. 3 is a bottom view of such skate-stock A, and of its axle b, extending from a driving-wheel, L, across half of the bottom of the stock, fastened there and then bent on an angle downward to and entering the axle-holder and smaller driving-wheel, M; also, of its heel-roller K, with its periphery flat and wider than that of the roller J under the toe. Fig. 4 is a vertical cross-section of such skate-stock A, showing an axle, b', for driving-wheels across about half of the bottom, then through it, and then across the other half of the top of the stock, also showing a driving-wheel, N, with a projected hub, n, on one side and a short hub, m, on its other side; also, a smaller driving-wheel, M, without projected hubs; also, the tubular passage g' g'. Fig. 5 is a top view of the skate-stock A for the right foot, showing the axle b² for driving-wheels across its stock, with the axle ends b³ b³ inclined laterally. Fig. 6 is a top view of a skate-stock, A, for the right foot, showing laterally-inclined axles b⁴ b⁴ of two toe and two heel rollers, f f, f f, which are in dotted lines. Fig. 7 is a front end view of said skate-stock A, with two toe-rollers, f f, one on each end of the axle b⁴, and with two side axle-holders, D' D', bent up. Fig. 8 is a view of the rear end of said skate-stock A, with a cast-roller, P, attached to its heel, and having its periphery flat and wider than that of the toe-roller. Fig. 9 is a perspective view of said caster-roller P. Fig. 10 is a side view of said stock A with its side axle-holders, D' D', turned up, and with a skate-runner, Q, affixed, with its washers h h, upon the toe and heel axles. Fig. 11 is a cross-section of a skate-stock, A, fitted with an axle for a large driving-wheel, L, with a projected hub, n, said axle being bent on one side for a smaller driving-wheel, M, without projected hubs.

The first part of my present invention relates to the stock, which I stamp with its heel-holder, its toe, side, and heel axle holders shaped in one piece from a sheet of what is known as "homogeneous steel," as shown in Fig. 1, which is a top view of the skate-stock blank A,

its component heel-holder B and toe axle-holders C C, side axle-holders, D D, and heel axle-holders E E. Any other suitable sheet metal may be used; but I prefer such homogeneous sheet-steel, about a sixteenth of an inch in thickness, on account of its comparative cheapness, strength, pliability, uniform texture, and other good qualities. If more stiffness be required, I corrugate the stock through its center, F F, in Fig. 1, from heel to toe; also, its heel and axle holders and in other parts, if desirable. I also turn the edges up or down, if required, for stiffness, or to aid in holding the foot, as at *a* and I, Fig. 2. I make slits in the edges of the stock to admit the forming of the heel and axle holders, as shown from G to G, Fig. 1. I make holes in the axle-holders for the different axles, as shown in dotted lines at H H, Fig. 1. The heel and axle holders are bent into place by formers or other convenient means, and dotted lines from *d* to *d* in Fig. 1 show where they are to be bent at right angles to form said holders. The two axle-holders D D, Fig. 2, side view, one at or near the middle of one side and the other at or near the middle of the opposite side of the stock A, may be bent above, as shown in dotted lines D', Fig. 2, according to the position of the axles of the driving-wheels to be held by them. The toe axle-holders C C, Fig. 2, side view, and heel axle-holders E E, Fig. 2, side view, are bent down to hold their axles. The heel-holder B, side view, Fig. 2, is bent up and curved forward to hold the heel. The ends of B are supported by two parts of the stock I I, bent up.

As one illustration of the application and use of said metal stock, and at the same time of said heel-roller, the second part of my invention, I arrange one comparatively small roller, J, Figs. 2 and 3, under the toe of said metal stock, and another comparatively small roller, K, with a wider periphery under its heel, to support the ends of the stock, and one comparatively large driving-wheel, L, with one of its hubs longer than the other, on an inclined axle, and at or near the middle of the outside of the stock, and another smaller driving-wheel, M, without projected hubs, on an inclined axle, at or near the middle of the other side of the stock, but not under it, to support its sides and for driving and turning. I make the peripheries of these end rollers flat, and that of the end roller, K, wider than that of the toe-roller J, because I find it affords greater certainty and firmness in the tread and movements of the skater, and on account of the general tendency of the weight of the body toward the heel.

The third part of my invention relates to the axles. For ordinary use those for the driving-wheels are under said stock. If required above it, the side axle-holders can be turned up, as shown in dotted lines D', Fig. 2. Fig. 5 shows an axle across the top of the stock. Fig. 3 shows an axle for a large driving-wheel extending across the bottom of the

stock, fastened there, and then bent on an angle downward to and entering the axle-holder, to hold a smaller driving-wheel, M, upon the other side of the stock. Fig. 4 shows an axle *b*, extended half way across the bottom, then through it, at or near its center, and then across the other half of the top of the stock into the axle-holder. Fig. 11 shows a skate stock with an axle, *b*⁵, bent to hold a driving-wheel, L, on one side, differing in diameter from the driving-wheel M at the other. This axle may be used above or below the stock. The axles may be fastened by any convenient means. The bearings of the axles of the driving-wheels I usually affix at right angles with the stock or axle holders. As novices are apt to proceed with one foot almost directly in front of the other, which is thereupon led or disposed to slide back almost as directly in the rear, I give to the axle of each driving-wheel an inclination laterally of about a sixteenth of an inch, that of the outside wheel toward the heel and that of the inside wheel toward the toe of the stock, as at *b*³ *b*³, Fig. 5. This inclination is devised to enable novices to strike out at once, as it were, almost involuntarily to the right and to the left, and to execute at the very outset one of the first, if not the most important, of skating movements, which is no sooner acquired than duly followed by other skating movements. Therefore I prefer axles so inclined to straight axles for the driving-wheels.

I make one end of the hub *n* of the outside driving-wheel to project more than its other end, *m*, Fig. 4, that its longer end may be next to the stock or axle holder for a wide foot or its short end there for a narrow foot, when combined or used with a stock having upon its other side a driving-wheel, M, without projected hubs, Fig. 4. When I use said metal stock without driving-wheels, but with two rollers at each end, I either stamp it without the two driving-wheel-axle holders or bend them up above the stock, to prevent the foot sliding sidewise, as at D' D', Figs. 6 and 7, and put longer axles *b*⁴ *b*⁴ instead of short ones into the toe and heel axle holders and a small roller, *f*, on the end of each of those two longer axles, as in Fig. 8, and thus provide said stock with two rollers instead of one at each end. When I thus use toe and heel rollers, I give to their axles an inclination, as shown at *b*⁴, Fig. 6, to produce the same effect as is produced by the inclination of the axles of the driving-wheels. Through the outside of the hubs of roller-skates to their axles I make a tubular passage for lubrication, as at *g*¹ *g*¹, Fig. 4. With said metal stock, whether combined with side wheels and rollers or end rollers alone, I use for small rooms, instead of the heel-roller K, a caster-roller, P, Figs. 8 and 9, with its periphery flat and wider than that of the roller under the toe of the stock, the heel axle-holders being bent up and fastened against the bottom of the stock for more strength there, and so that said caster-roller may be properly

riveted and held in place. For ice-skating I remove the wheels and rollers from said metal skate-stock, put a suitable ice-skate runner, Q, in place of the toe and heel rollers, using the same axles, and fastenings with washers *h h*, as shown in Fig. 10.

What I claim as my invention is as follows:

1. A skate-stock blank, A, shaped for the stock, heel, and axle holders in one piece from a sheet of homogeneous steel or other suitable sheet metal, substantially as set forth.

2. A skate-stock with a heel-holder and axle-holders all in one piece, stamped, formed, and made from a sheet of homogeneous steel or other suitable sheet metal, substantially as and for the purposes described.

3. A sheet-metal skate-stock corrugated substantially as and for the purposes described.

4. A sheet-metal skate-stock blank provided with slits G G, substantially as and for the purposes described.

5. In a sheet-metal skate-stock, each component heel and axle holder bent into position substantially as and for the purposes described.

6. A sheet metal skate-stock provided with a roller under each end, with flat peripheries, that under the heel being wider than that under the toe, in combination with two driving-wheels, one upon each side (not under) of the stock, the inside wheel being smaller in diameter than the outside wheel, substantially as and for the purposes described.

7. In driving-wheel skates, a roller under the toe with a flat periphery and a roller under the heel with a periphery flat and wider than that of the roller under the toe, substantially as and for the purposes set forth.

8. In combination with a sheet-metal skate-stock, a roller under the toe with a flat periphery and a roller under the heel with a periphery flat and wider than that of the roller under the toe, all substantially as and for the purposes set forth.

9. In combination with a sheet-metal skate-stock without driving-wheels, a roller under the heel and two rollers under the toe with flat peripheries, that under the heel wider than that of either of the two rollers under the toe, all substantially as and for the purposes described.

10. In roller-skates, the bent axle *b⁵* for the

driving-wheels, substantially as and for the purposes described.

11. In driving-wheel skates, the combination, with the driving-wheels, of an axle extending at right angles across the stock, having each projecting end bent laterally at an angle with the main portion of the axle, all arranged and operating substantially as and for the purposes described.

12. In roller-skates having driving-wheels, the end of the hub of one driving-wheel made to project more than the other end of its hub, when used in combination with an opposite driving-wheel whose hubs are short and equal, substantially as described and shown.

13. A sheet-metal skate-stock with its central axle-holders turned up, and having two rollers under the heel and two rollers under the toe of the stock, and without driving-wheels, all constructed and arranged substantially as described.

14. In roller-skates having two rollers at each end of the stock, one axle with its ends bent at an angle laterally with the main portion of the axle for the two toe-rollers and another axle with its ends similarly bent for the two heel-rollers, arranged and operating substantially as and for the purposes set forth.

15. In roller-skates, the passage *g'*, extending from the outside of the hubs to the bearings of the wheels and rollers, substantially as and for the purposes described.

16. In a sheet-metal skate-stock without driving-wheels, the combination of a caster under the heel with two rollers under the toe, the peripheries of the toe-rollers being flat and that of the caster being flat and wider than the periphery of either of the rollers under the toe, all constructed and arranged substantially as set forth.

17. A sheet-metal skate-stock constructed with the axle-holders C and E, adapted for the substitution of an ice-skate runner, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WASHINGTON PARKER GREGG.

Witnesses:

BENJ. HALL CURRIER,
GEO. O. CURRIER.

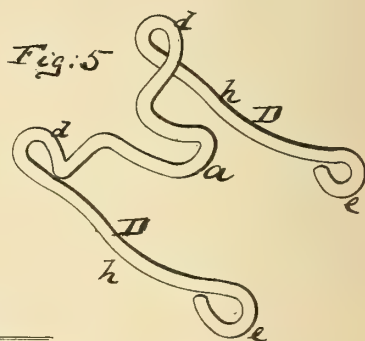
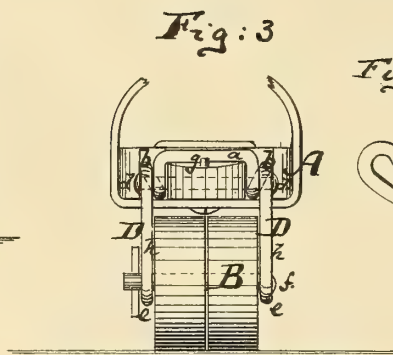
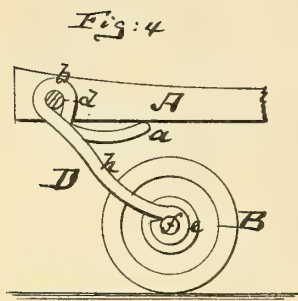
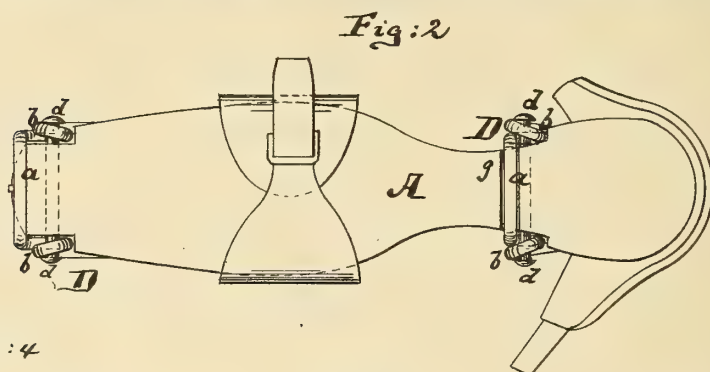
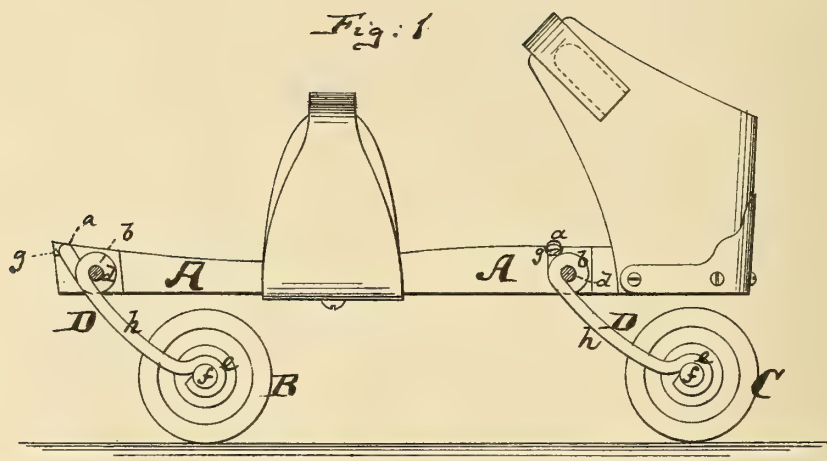
(Model.)

A. J. LUTZ.

ROLLER SKATE.

No. 277,911.

Patented May 22, 1883.



Witnesses:
John C. Tunbridge,
Wm. H. Assanby

Inventor
A. J. Lutz
by his attorneys
Brisson & Betts

UNITED STATES PATENT OFFICE.

ALBERT J. LUTZ, OF NEW YORK, N. Y.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 277,911, dated May 22, 1883.

Application filed September 30, 1882. (Model.)

To all whom it may concern:

Be it known that I, ALBERT JULIUS LUTZ, of New York, in the county and State of New York, have invented an Improved Roller-Skate, of which the following is a specification.

Figure 1 is a side view of my improved roller-skate. Fig. 2 is a plan or top view of the same. Fig. 3 is an end elevation thereof. Fig. 4 is a side view of part of the skate, showing a modified form of bracket. Fig. 5 is a perspective view of said modified form of bracket.

This invention relates to a new manner of joining the rollers to the foot-board of a skate; and it consists in the employment, for this purpose, of certain spring-brackets which are made of wire, and which are fastened by pins to the foot-board, all as hereinafter more fully described. By making these brackets of wire, bent in the peculiar manner in which I bend them the advantages are gained of simplicity of construction, economy, strength, and lightness, and the foot-board which supports these brackets is further pressed by them.

In the drawings, the letter A represents the foot-board of a roller-skate.

B is the front roller or set of rollers, and C the rear roller or set of rollers. Each of these rollers is hung in a bracket, D, there being two such brackets shown on the same skate.

Each bracket D is made of steel wire bent into the general form of a letter U, when looked at from the end, as in Fig. 3, and made to straddle the foot-board A, so that the middle and upper portion, *a*, of the bracket rests on the foot-board. At the sides of the foot-board the bracket is formed into coils *b*, through which the fastening pin or bolt *d* is inserted. The same pin, *d*, can pass through both coils *b* of one bracket to hold the bracket firmly in place. The lower end of each bracket is formed into eyes *e*, in which the axles *f* of the wheels have their bearings. Between the coils *b* and the eyes *e* the bracket inclines backward, as shown at *h*. The upper portion, *a*, of the

bracket rests against a shoulder, *g*, in the foot-board, which shoulder is either formed by grooving the foot-board or by a separate projection therefrom.

It will be readily seen that the brackets D, formed of the parts *a b h e*, can be readily bent in a machine into the form shown, and that their attachment to the foot-board is very easy, as it is only necessary to insert the pin *d* through the coils *b*, and through the perforation previously made for its reception in the foot-board. The brackets straddling the foot-board strengthen the same, and the portions *h*, which are below the foot-board, are springy, giving elasticity to the skate.

In Figs. 4 and 5 is shown a modified form of bracket, in which the part *a* is carried under instead of over the foot-board A, bearing against it, so as to constitute an additional spring.

I claim—

1. In a roller-skate, the straddling brackets D D, placed over the foot-board and connected with the axles of the skate-rollers, substantially as described.

2. The bracket D, constructed with the top portion, *a*, side coils, *b*, inclined parts *h*, and lower eyes, *e*, for use on a roller-skate, substantially as specified.

3. The straddling bracket D, constructed substantially as described, in combination with the foot-board A of a roller-skate, and with the front support, *g*, on said foot-board, substantially as herein shown and described.

4. The combination of a foot-board of a roller-skate with the roller-carrying wires *h h*, having eyes *b* at their upper parts and eyes *e* at their lower parts, and with the fastening-pin *d*, passing through said eyes *b*, substantially as herein shown and described.

ALBERT JULIUS LUTZ.

Witnesses:

WILLY G. E. SCHULTZ,
HARRY M. TURK.

(No Model.)

W. ROBINSON.
PEDICYCLE.

No. 278,185.

Patented May 22, 1883.

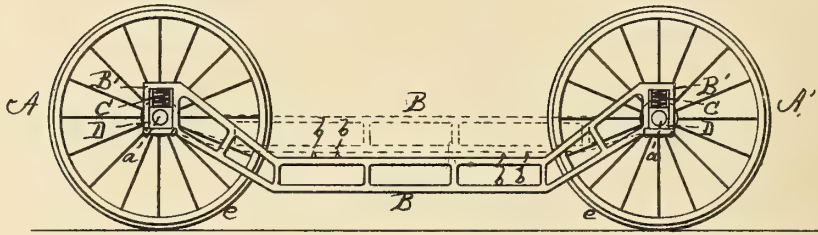


Fig. 1 -

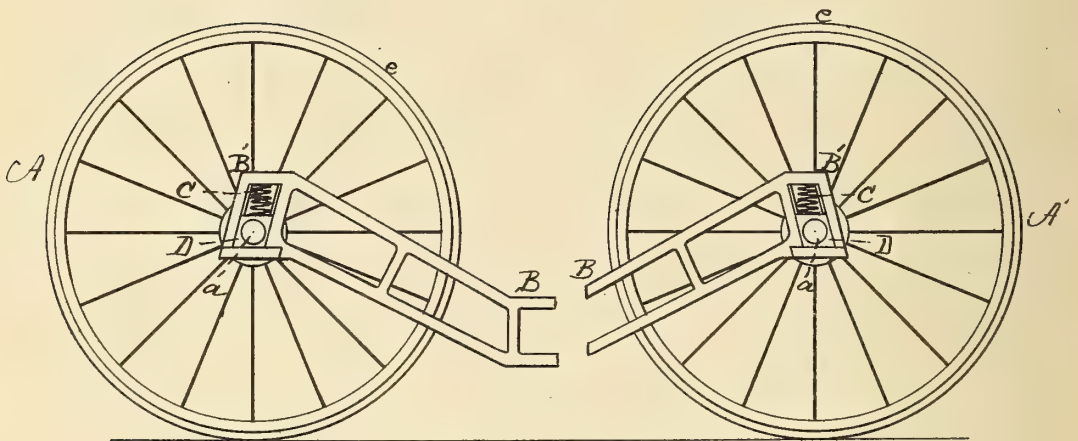


Fig. 2 -

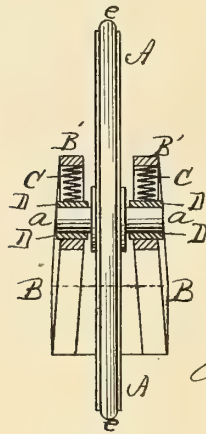


Fig. 3 -

WITNESSES

Joseph Ishbaugh.
Irving H. Baker.

INVENTOR

William Robinson
By his atty.,

Henry W. Williams

UNITED STATES PATENT OFFICE.

WILLIAM ROBINSON, OF BOSTON, MASSACHUSETTS.

PEDICYCLE.

SPECIFICATION forming part of Letters Patent No. 278,185, dated May 22, 1883.

Application filed November 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROBINSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Pedicycle, of which the following is a specification.

This invention consists, essentially, of two wheels in the same plane supporting a platform or foot-support situated between said wheels, preferably on or below the level of their axes, said platform being provided with suitable means whereby the foot can rest securely thereon while the pedicycle is propelled, somewhat after the manner of a roller-skate.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of my pedicycle. Fig. 2 is an enlarged view of Fig. 1. Fig. 3 is a cross vertical section of the same.

A A' are respectively forward and rear wheels on the same plane, and B is a platform or foot-support hung between and supported by said wheels. This platform B is preferably (although not necessarily) a skeleton frame, provided usually on its upper surface with points *b* for preventing the foot from slipping. Straps or other suitable devices may be attached, if desired, for securely holding the foot in position on the platform. The surface of this platform B is preferably either on the line of the axles, as shown in broken lines, Fig. 1, or below said line, as shown in full lines, Fig. 1, as in case it is placed above said line there is danger of some twisting of the ankle in the endeavors to keep the pedicycle upright and level. In order that the vibration or jar may be absorbed to some extent, the ends of the platform B are formed into sliding frames B', containing and resting upon springs C, whose seats are the boxes D, surrounding the axles *a*. To prevent slipping, rubber tires *e* may be applied to the wheels.

In Fig. 2 provision is made for steering by means of the radiation of the axles. This is accomplished by constructing the frames B' with sides inclining from the perpendicular, substantially as shown. If the user desires to turn to the left, for example, he bears down the left side of the pedicycle by bearing his foot in that direction. The effect is of course to press down the frames B' on that side, com-

pressing the springs C, thus drawing the ends of the axles *a* in said boxes nearer to each other, (the axle ends approaching nearer to the tops of the frames B', and hence nearer to each other.) This of course radiates the axles. When the pressure is even and the wheels upright the wheels are in line and the axles parallel.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A pedicycle consisting, essentially, of two wheels in the same plane, and a platform or foot-support between and supported by said wheels, substantially as set forth.

2. A pedicycle consisting, essentially, of two wheels in the same plane, and a platform or foot-support between and supported by said wheels, the upper surface of said platform being on a line which is not above the level of the axles of said wheels, substantially as and for the purpose set forth.

3. In a pedicycle, the combination, with the wheels A A', of a platform or foot-support hung between said wheels and provided with the points *b*, substantially as and for the purpose described.

4. In a pedicycle, the combination, with the wheels A A', of the skeleton platform or foot-support B, substantially as and for the purpose described.

5. In a pedicycle consisting, essentially, of two wheels in the same plane, and a platform or foot-support hung between said wheels, the combination, with the axles *a* and boxes D, of the frame B', substantially as and for the purpose set forth.

6. In a pedicycle consisting, essentially, of two wheels in the same plane, and a platform or foot-support hung between said wheels, the combination, with the axles *a* and boxes D, of the frame B', having sides inclining from the perpendicular, substantially as and for the purpose set forth.

7. In a pedicycle, a foot-platform resting on one or more springs supported by the axles of the wheels, for the purpose set forth.

WILLIAM ROBINSON.

Witnesses:

HENRY W. WILLIAMS,
JOSEPH ISHBAUGH.

(No Model.)

E. B. MANSFIELD.
ROLLER FOR PARLOR SKATES.

No. 278,666.

Patented May 29, 1883.

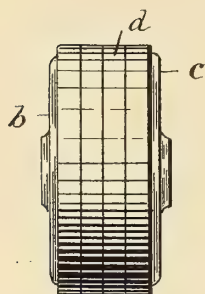


Fig. 1.

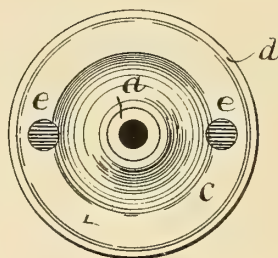


Fig. 2.

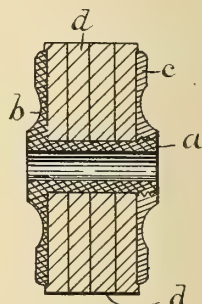


Fig. 3.

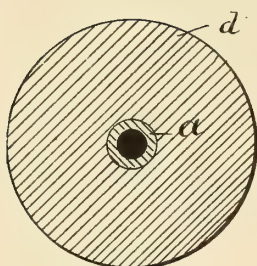


Fig. 4.

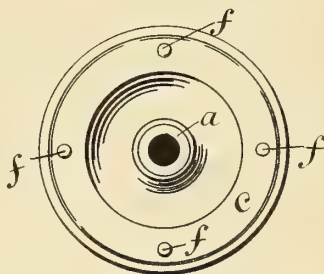


Fig. 5.

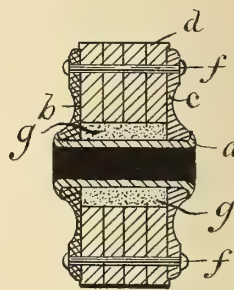


Fig. 6.

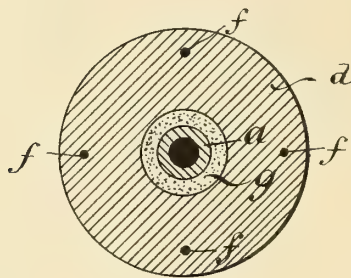


Fig. 7.

Witnesses.

Chas. S. Gooding,
Eugene Humphrey

Inventor:

Eben B. Mansfield
per Bates & Wentworth
Atty's.

UNITED STATES PATENT OFFICE.

EBEN B. MANSFIELD, OF MALDEN, ASSIGNOR OF ONE-HALF TO THOMAS CURLEY, OF WALTHAM, MASSACHUSETTS.

ROLLER FOR PARLOR-SKATES.

SPECIFICATION forming part of Letters Patent No. 278,666, dated May 29, 1883.

Application filed April 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, EBEN B. MANSFIELD, of Malden, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Rollers for Parlor-Skates, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

This invention relates to the rollers or trucks which are employed in skates known as "parlor-skates;" and the invention consists in a roller having a peripheral face formed of leather, or the analogous material, of green hide, and in the combination therewith of the devices employed for mounting the leather or green hide.

In said drawings, Figure 1 is an edge elevation of my improved roller complete for use. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal section of the wheel shown in the preceding figures. Fig. 4 is a transverse section of the same. Fig. 5 is a view similar to Fig. 2, but showing the supporting-disks united by rivets which pass through the leather parallel with the axis of the roller. Fig. 6 is a longitudinal section of the roller shown in Fig. 5, two of the rivets being shown in elevation, and a cushioning rubber sleeve being also shown in section. Fig. 7 is a transverse section, showing the same parts as are shown in Fig. 6.

In said views, *a* represents a metallic sleeve, which receives the pivot of the skate, on which the roller revolves when the skate is in use. Said sleeve may be formed as an integral part of disk *b*, as shown in Fig. 3, and the disk *c* be secured thereon by screw-threads, as shown in said figure; or said sleeve may be a section of a tube formed independently of said disks, and be secured therein by riveting, as shown in Fig. 6; or said sleeve may be formed as a part of one disk, as shown in Fig. 3, and the other disk be secured upon it in the manner shown in said Fig. 6.

The disks *d*, which constitute the peripheral face of my roller, are cut from leather of the desired solidity, and are concentrically mounted either directly upon sleeve *a* or upon said sleeve with an interposed body, *g*, of elastic rubber,

after which disks *b c* are pressed against the leather with the requisite force to duly compress the same. When the disks are arranged in relation to the sleeve as shown in Fig. 3, such compression is effected by rotating disk *c* by means of a spanner inserted in holes *e* therein, the screw-thread connection between disk *c* and sleeve *a* serving to produce such compression when the disk is rotated in a right-hand direction; and when the disks and sleeve are arranged as shown in Fig. 6 the disks are forced against the leather in a suitable press, when the ends of the sleeve are enlarged so as to produce the riveting thereof. After the leather is thus secured in place between the disks the roller is mounted in a lathe and the leather is turned perfectly true and concentric with the axis of the sleeve. When these rollers are to be subjected to severe strain by reason of unusual weight of the person using the skate, or from other causes, I employ, in addition to the means already described for securing disks *d* in place, the rivets *f*, which, passing through the roller parallel with the sleeve and between the sleeve and the periphery, serve to so secure the parts together that no severity of strain to which they may be subjected in use will in any degree release the pressure of the metallic disks upon the leather; and said rivets also prevent the possibility of the rotation of the leather between the disks and upon the sleeve in case the latter should not rotate freely upon its arbor. For the purpose of cushioning and muffling the rollers where even a small amount of noise would be objectionable, I employ a sleeve or tube, *g*, of elastic rubber, which is arranged upon sleeve *a* and within disks *d*, and which serves as the immediate axial support of the leather.

By the employment of leather as the peripheral face or bearing of my roller the skate is rendered almost noiseless as compared with those provided with the usual wood rollers, whose resonant properties cause them to produce a most unpleasant noise when in use; and, besides, such wooden rollers rapidly disintegrate and destroy the floors upon which they are used; and by interposing rubber *g* between the leather *d* and sleeve *a* the elastic property of the rubber is largely economized in cushion-

ing the skate, while it is preserved from the rapid disintegration which occurs when it is employed as the peripheral face of the roller, besides which, leather possesses an advantage
5 over all other materials of which I have knowledge for such use, in that it gives exactly the desired degree of hold or contact with the floor, which constitutes an important quality in such rollers.

10 I claim as my invention—

1. A skate-roller formed with metallic sleeve *a*, disks *b* *c*, and concentric disk-like rings *d*, of leather or green hide, mounted upon said sleeve and compressed between said disks, sub-
15 stantially as specified.

2. A skate-roller formed of the materials and in the manner specified in the preceding claim, and having the securing-rivets *f* arranged near its periphery, in the manners shown.

3. In a skate-roller formed with metallic
20 sleeve *a*, disks *b*, and the leather or green-hide disk-like rings *d*, as specified, the elastic rubber sleeve *g*, interposed between sleeve *a* and rings *d* to cushion the same, substantially as specified.

EBEN B. MANSFIELD.

Witnesses:

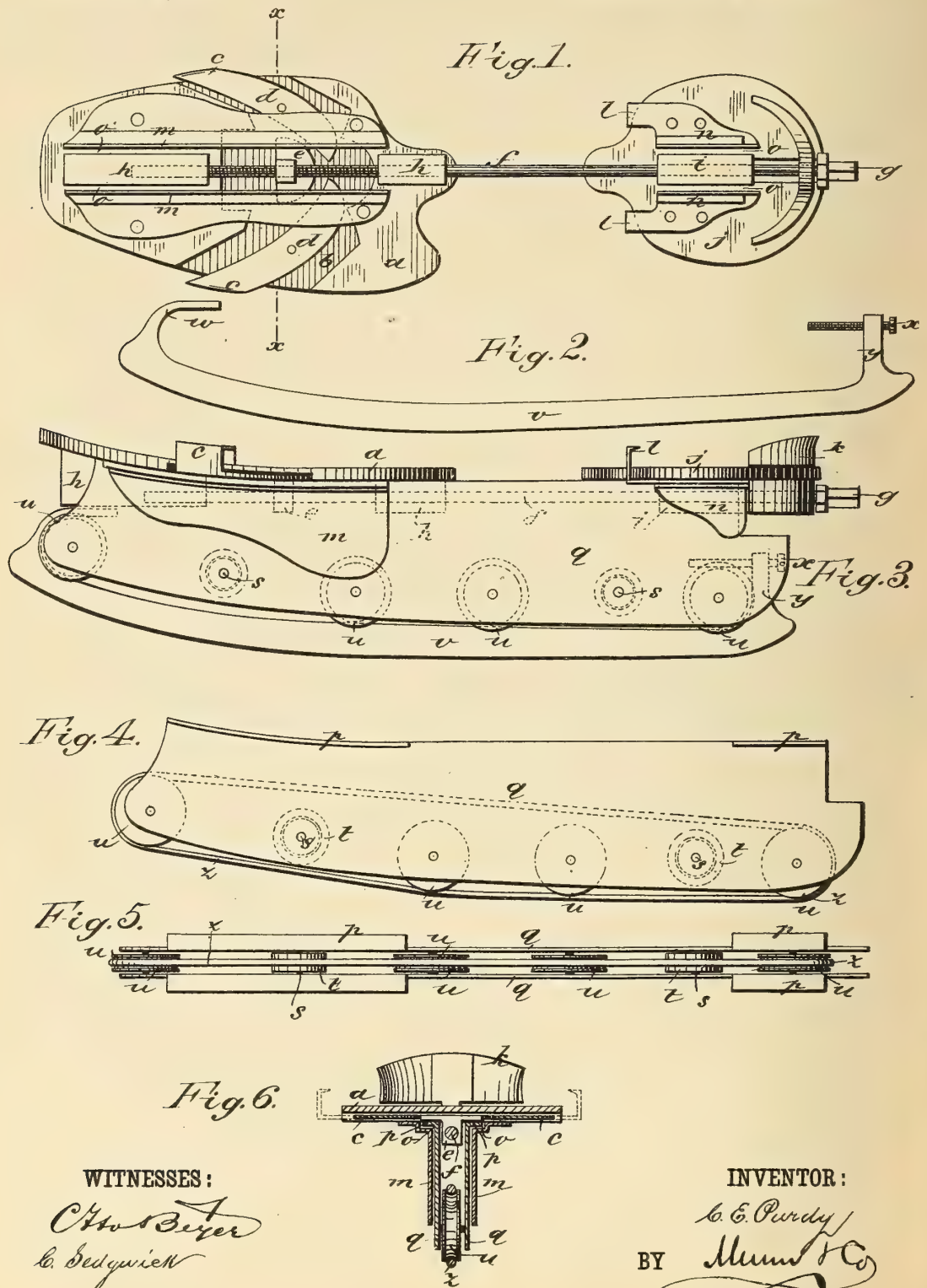
EUGENE HUMPHREY,
T. W. PORTER.

(No Model.)

C. E. PURDY.
SKATE.

No. 279,105.

Patented June 5, 1883.



WITNESSES:

Chas. B. Beyer
L. Sedgwick

INVENTOR:

C. E. Purdy

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CLEMENT E. PURDY, OF WOOSTER, OHIO.

SKATE.

SPECIFICATION forming part of Letters Patent No. 279,105, dated June 5, 1883.

Application filed November 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, CLEMENT E. PURDY, of Wooster, in the county of Wayne and State of Ohio, have invented a new and Improved Skate, of which the following is a full, clear, and exact description.

My invention consists of a combined ice-skate and parlor-skate, with contrivances for readily shifting it from one condition to another, also with improved contrivances for securing it to the feet of the skater, and also with contrivances adapting it to run smoothly on the floor or carpet without damage thereto, all as hereinafter fully described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan of the heel and toe plates inverted, together with the clamping devices for attaching the plates to the shoe-sole, also with brackets employed to attach the roller-carrier and the ice-runner. Fig. 2 is a side elevation of the ice-runner. Fig. 3 is a side elevation of the improved skate with the ice-runner attached. Fig. 4 is a side elevation of the roller attachment. Fig. 5 is a plan view of Fig. 4; and Fig. 6 is a transverse section of Fig. 1 on line *x x*, with the roller-carrier applied.

The toe-plate *a* has a wide recess, *b*, in the under side, in which the toe-clamps *c* are pivoted at *d*, to be made to grip the edges of the shoe-sole by the slide-nut *e* when forced against them by the binding-screw *f* when turned by a key applied to the shank *g*, the said screw being fitted in the bearings *h* on the toe-plate and *i* on the heel-plate *j*, so that at the same time that it draws nut *e* against the toe-clamps it also draws heel-clamps *k* against the back of the shoe-heel and binds it against the clips *l*, permanently attached to the heel-plate and arranged to clip the front side of the heel. The toe-plate has brackets *m* and the heel-plate has brackets *n* attached to them parallel with the screw-bearings *h* and *i* and a little distance therefrom, forming narrow Γ -shaped grooves *o*, in which the flanged upper edges, *p*, of the plates *q*, connected by rivets *s* and washers *t*, are connected by sliding lengthwise into said grooves, the said plates constituting an attach-

ment for the rollers *u* and the ice-runner *v*. The rollers *u* are grooved to receive and rest on the upper edge of the runner, which is attached by means of the hook-point *w* hooking over the front roller and the thumb-screw *x* screwing in the stud *y* over the hind roller. When the runner *v* is not used I apply an endless belt, *z*, to the grooved rollers, which fills the grooves and forms the bearing for the rollers on the floor or carpet, preventing injury thereto by the rollers, also preventing the rollers from slipping on the floor, and also insuring better action of the rollers.

It will be seen that as the heel and toe plates are not positively or rigidly connected together, but can shift toward and from each other on the plates *q*, the skates adjust themselves to fit the feet of persons materially differing in sizes. The bracing of the plates *q* between the vertical portions of the brackets *m* and *n* and the bearings *h* and *i* of the screw afford the required lateral stability to the detachable connection of the heel and toe plates with the roller and runner carrier.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the plates *q q*, having flanged edges *p*, adapted to slide in grooves *o*, the rivets *s*, and the washers *t*, whereby is formed a roller-frame adapted to slide in and out of the skate, as described.

2. The skate-runner having a hook-point in front and a rear stud, *y*, adapted to carry a screw, *x*, whereby it may be used with rollers, as described.

3. The combination of toe-plate *a*, heel-plate *j*, brackets *m n*, and the roller and runner connecting-plates *q*, said brackets forming grooves *o*, and said plates *q* having flanges *p* fitting said grooves, substantially as described.

4. The combination of roller-plates *q*, toe-plate *a*, heel-plate *j*, and heel and toe clamping devices, substantially as described, the said roller-plates and toe and heel plates being detachably connected together, substantially as set forth.

5. The screw-bearings *h* and *i*, in combination with brackets *m* and *n*, and the roller and runner connecting-plates *q*, substantially as described.

6. The combination of rollers *u*, plates *q*, toe-plate *a*, and heel-plate *j*, said toe-plate and heel-plate being detachably connected to the roller-plates, substantially as described.

5 7. The combination of grooved rollers *u*, runner *v*, attached thereto, roller-plates *q*, and the heel and toe plates *j a*, substantially as described.

8. The runner *v*, having hook *w* and thumb-
10 screw *x*, in combination with grooved rollers

u, roller-plates *q*, and the heel and toe plates, substantially as described.

9. The combination of endless belt *z* with grooved rollers *u*, roller-plates *q*, and the heel and toe plates, substantially as described.

CLEMENT E. PURDY.

Witnesses:

L. Q. JEFFRIES,
JOHN P. JEFFRIES.

(No Model.)

T. DAY.
ROLLER SKATE.

No. 279,138.

Patented June 12, 1883.

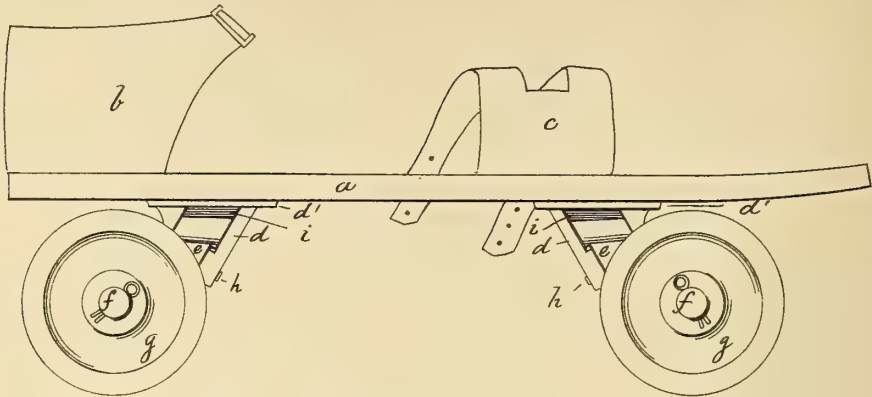


Fig. 1.

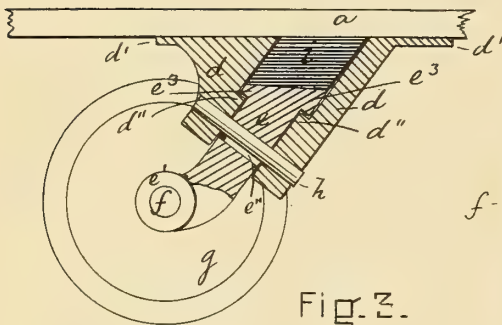


Fig. 3.

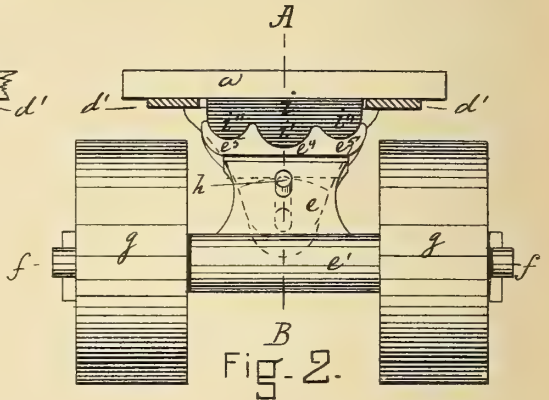


Fig. 2.

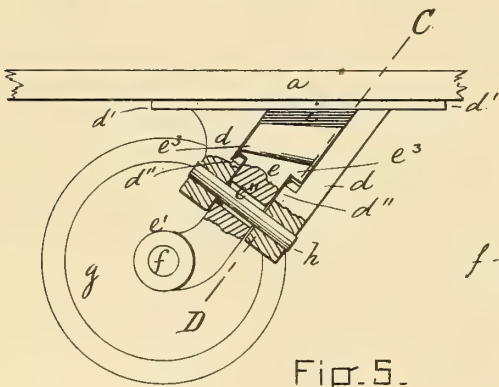


Fig. 5.

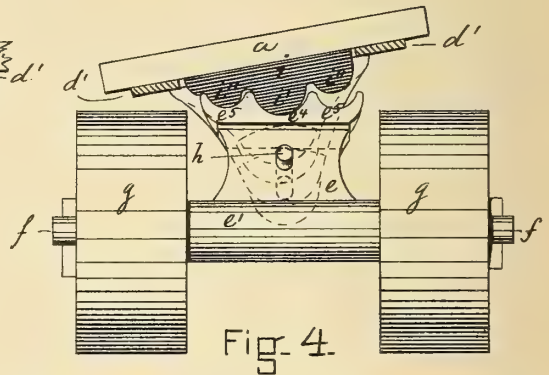


Fig. 4.

WITNESSES.

Henry Chadborn
John H. Foster

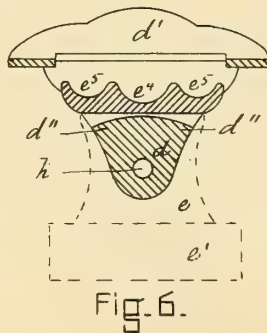


Fig. 6.

INVENTOR.

Thomas Day,
by
Abner Andrew
his atty.

UNITED STATES PATENT OFFICE.

THOMAS DAY, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 279,138, dated June 12, 1883.

Application filed April 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DAY, a citizen of the United States, residing at Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in roller-skates, and it is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 represents a side elevation of the improved roller-skate. Fig. 2 represents a sectional end elevation of the skate, showing the foot-board in a level position. Fig. 3 represents a vertical section on the line A B, shown in Fig. 2. Fig. 4 represents a sectional end elevation of the skate, showing the foot-board inclined to its extreme limit in relation to the axis of the rollers. Fig. 5 represents a sectional side elevation of one of the boxes, showing the rollers and hanger in the act of yielding upward toward the foot-board; and Fig. 6 represents a cross-section on the line C D, shown in Fig. 5.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

In the drawings, *a* represents the foot-board, as usual, which may be made of wood or metal, and provided with straps *b* and *c*, or any other suitable means for fastening the skates to the feet of the wearer.

To the under side of the foot-board *a* are secured the heel and toe boxes *d d* by means of suitable screws or rivets passing through the flanges *d' d'* of said boxes, or in any other well-known or equivalent manner.

e is the hanger, having horizontal sleeve *e'* in its lower end, through which passes the spindle *f*, on which the rollers *g g* are journaled, as is usual on roller-skates; or the spindle *f* and horizontal part *e'* of the hanger may be made in one single piece without departing from the essence of my invention. The hanger *e* is jointed to the lower forked ends of the box *d* by means of the pin, screw, or rivet *h* to enable the hanger *e* to rock on the said pin *h* as a fulcrum and to admit the hanger *e* to move

slightly to and from the foot-board *a*. I make the hole *e''* in it, through which the pin *h* passes, as a slotted perforation, as shown in Figs. 3 and 5, or, what is equivalent to it, slotted perforations through the lower forked ends of the box *d* and a circular perforation through the hanger *e*, although I prefer to make the hole *e''* slotted, as shown in the drawings. Each hanger *e* is provided with side lips or extensions, *e³ e³*, which, in connection with internal projections, *d'' d''*, on the inside of the box *d*, serve two purposes—namely, to limit the rocking motion of the box *d* in relation to the hanger *e*, and thus serve as stops when the foot-board *a* is rocked to its farthest extent in either direction, and also to prevent the hanger from getting detached from its box by the accidental breakage of the fulcrum-pin, screw, or rivet *h*. In the upper end of each hanger *e* is made a central recess, *e⁴*, with side recesses, *e⁵ e⁵*, on each side of it, as shown in Figs. 2, 4, and 6, which recesses are preferably made semicircular, as shown in said figures, but may be made of any other suitable shape, as may be desirable. The upper space in the box *d*, between the under side of the foot-board *a* and the recessed upper part of the hanger, is adapted to receive the elastic rubber cushion *i*, the upper side of which is made to fit the under side of the foot-board *a*, its ends made inclined to fit the inclined inner sides of the box *d*, as shown in Figs. 1, 3, and 5, and its under side provided with a central projection, *i'*, and side projections, *i'' i''*, on each side of it, as shown in Figs. 2 and 4, which projections are adapted to rest in the corresponding recesses, *e⁴ e⁵ e⁵*, in the top of the hanger *e*, as shown. By the arrangement of the projections on the under side of the rubber cushion *i* and corresponding recesses in the top of the hanger *e* several advantages are obtained, among which may be mentioned that the pressure on the foot-board is always adapted to bear on the central elastic projection, *i*, whether the foot-board is level or inclined to the right or left, and which serves, as it were, as an elastic fulcrum, on which the foot-board rocks as it is inclined by the varying pressure of the skater; and when the foot-board is inclined to one side, as shown in Fig. 4, it is supported on two of the yielding projections—namely, the central one, *i'*, and

that one of the side projections, i'' , which for the time being is nearest to the depressed side of the foot-board a , as shown in Fig. 4. Another advantage of this form of rubber cushion and recessed hanger is that the rubber is prevented from spreading out in either direction, and thus retains the life and elasticity of it a much longer time than is the case with ordinary roller-skate cushions now in use.

10 By the construction as above set forth the cushion is prevented from working out or dropping out from between the foot-board and hanger.

15 By the vertical yielding connection of the hanger in relation to the box, as described, the rollers and hanger are permitted to automatically yield toward the elastic cushion i when used on uneven ground or floor without imparting a jar to the skater.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a roller-skate, the hanger e , with its side projections, e^3 e^3 , in combination with the stop projections d'' d'' on the box d , as and for 25 the purpose set forth.

2. In a roller-skate, the hanger e , with its central upper recess, e^4 , and side recesses, e^3 e^3 , in combination with the elastic cushion i , having corresponding central projection, i' , and 30 side projections, i'' i'' , as and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS DAY.

Witnesses:

ALBAN ANDRÉN,

HENRY CHADBOURN.

(No Model.)

G. D. BURTON.

ROLLER SKATE.

No. 279,220.

Patented June 12, 1883.

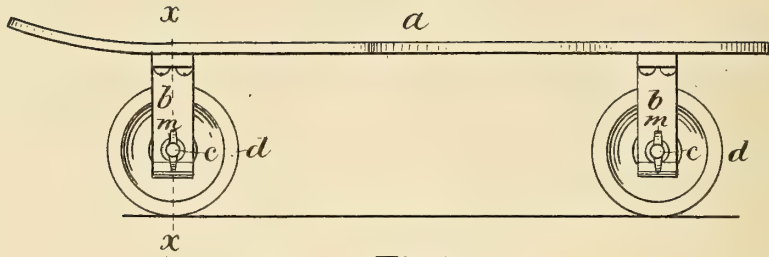


Fig. 1.

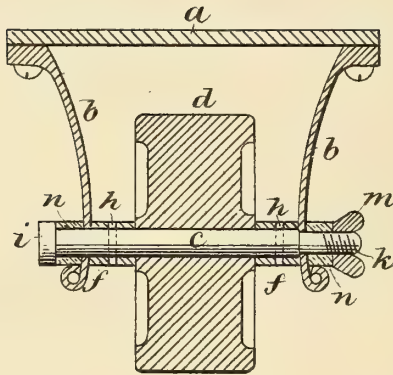


Fig. 2.

WITNESSES

John M. Holders
Jos. P. Livermore

INVENTOR

G. D. Burton

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF NEW IPSWICH, NEW HAMPSHIRE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 279,220, dated June 12, 1883.

Application filed March 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, of New Ipswich, county of Hillsborough, State of New Hampshire, have invented an Improvement in Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to roller-skates, and has for its object to produce a simple and inexpensive skate, and is embodied in a skate having two rollers, one at each end of the skate, and substantially at the middle thereof, the said rollers running on an axle supported at its ends in the lower ends of spring-pedestals made of thin strips of steel or other elastic material, rigidly fixed at their upper ends upon the skate-body or foot-board. Yielding collars or washers are interposed between the end of the pedestals and suitable projections at the ends of the roller-axes, which thus permit a lateral movement of the pedestal upon the said axes as the skate-body is rocked from its normally-upright position above the roller.

Figure 1 is a side elevation of a skate embodying this invention; and Fig. 2 a transverse vertical section thereof on line *xx*, Fig. 1.

The skate-body *a*, of any suitable or usual construction, has rigidly fastened thereto, at either side and at its forward and rear ends, spring-pedestals *b*, composed of steel or other strong elastic substance, the lower ends of which are thus free to spring laterally with relation to the skate-body. The said pedestals are curved, as shown in Fig. 2, and are provided at their lower free ends with openings to receive the axles *c* of the rollers *d*, (shown as two in number,) having broad cylindrical bearing-surfaces, and preferably somewhat rounded at their edges, as shown in Fig. 2.

The rollers *d* are prevented from moving longitudinally on their axles *c* by collars *f*, fixed upon the said axle, as by pins *h*, and interposed between the said rollers and the ends of the pedestals *b*.

One end of the axle *c* is provided with a flange, *i*, at a short distance from the normal bearing-point of the pedestal *b*, and the other end of the said axle is threaded, as shown at *k*, and provided with a nut or thumb-screw, *m*.

Yielding collars or washers *n*, preferably of soft rubber, are interposed between the ends of the pedestals *b* and the flange *i* and nut *m*, which constitute projections or shoulders to keep the said washers in place.

Owing to the curvature and elasticity of the pedestals *b*, when more weight is brought upon one side of the body or sole portion *a* of the skate than upon the other side, as when the foot of the wearer is inclined, the pedestals *b*, which are more heavily pressed upon, will yield or assume a greater curvature, and their lower free ends will move outward along the axle *c*, thus compressing the washers *n*, and as soon as the unequal pressure on the body *a* of the skate is removed, elasticity of the pedestals *b* and washers *n* will restore it to its normal horizontal position. The requisite freedom of rocking movement is thus attained in a very simple manner, and the skate has very few parts, so that the cost of construction is small, and it is not liable to get out of order.

I claim—

1. The skate-body and yielding pedestals composed of thin strips of steel adapted to spring laterally with relation to the skate-body, combined with the rollers' axles in the said pedestals, provided with projections or shoulders, and the yielding washers interposed between the said pedestals and shoulders, substantially as described.

2. The combination of the skate-body *a* and laterally-yielding spring-pedestals *b* with the rollers *d*, their axles, and collars fixed thereon at either side of the said rollers, substantially as described.

3. The combination, with the laterally-yielding spring-pedestals and roller-axes provided with a flange at one end and nut at the other end, of the rollers, and collars *f* and *n* on the said axles, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. D. BURTON.

Witnesses:

JOS. P. LIVERMORE,
BERNICE J. NOYES.

(No Model.)

E. B. MANSFIELD.
ROLLER FOR PARLOR SKATES.

No. 279,406.

Patented June 12, 1883.

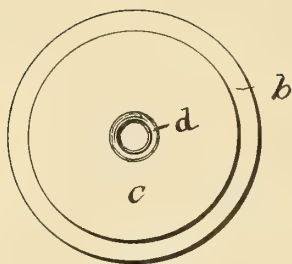


Fig. 1.

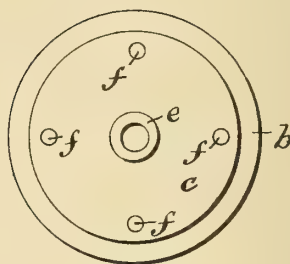


Fig. 2.

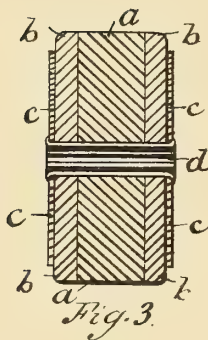


Fig. 3.

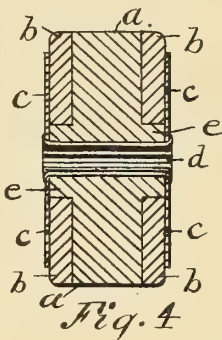


Fig. 4.

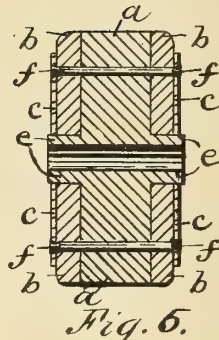


Fig. 5.

Witnesses:

Chas. S. Gooding.
Eugene Humphrey

Inventor:

Eben B. Mansfield
per Porter & Hutchinson
his attys.

UNITED STATES PATENT OFFICE.

EBEN B. MANSFIELD, OF MALDEN, ASSIGNOR OF ONE-HALF TO THOMAS CURLEY, OF WALTHAM, MASSACHUSETTS.

ROLLER FOR PARLOR-SKATES.

SPECIFICATION forming part of Letters Patent No. 279,406, dated June 12, 1883.

Application filed April 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, EBEN B. MANSFIELD, of Malden, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Rollers for Parlor-Skates, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

This invention relates to the rollers which are pivotally arranged beneath that class of skates known as "parlor-skates;" and the invention consists in the construction and combination of the divers devices embodied therein, as hereinafter more particularly and fully set forth and claimed. The rollers employed in parlor-skates require, in order to perform satisfactory service, certain qualities or characteristics, among which the following may be enumerated: first, noiselessness, or as near an approach thereto as can be attained without sacrificing other essential qualities; second, the least practicable tendency to abrade and wear out the floor; third, durability, both as regards wear upon the axis or pivot of the roll and upon the outer face or periphery of the rolls; fourth, just the requisite adhesion or grip upon the floor to give the skater a base for the exertion of his strength; fifth, a roll that is practically a true circle at all times, but which is slightly yielding, in order that it may act as a cushion between the operator and the floor. From long-continued experiments I have demonstrated that leather gives the most satisfactory grip or contact with the floor. It does not adhere with the objectionable tenacity of rubber, nor does it slip as easily as wood, and it does not injure the floor like wood; nor does it compress or flatten like rubber, thereby giving the effect of always rolling uphill, and is practically noiseless and causes a minimum amount of injury to the floor. On the other hand, wood of proper quality—such as "box-wood"—is elastic and durable, and when combined with leather, as will be described, a roller is produced that in various respects combines the better qualities of both.

In the accompanying drawings, Figure 1 is a side elevation of a roller constructed as shown in Figs. 3, 4, and embodying my invention.

Fig. 2 is a side elevation of a roller constructed as shown in Fig. 5, and embodying my invention. Fig. 3 is a longitudinal section of a roller formed with a central disk of wood and a disk of leather upon each side thereof, said parts being secured by metal cheeks or disks held in place by a metal sleeve whose ends are enlarged and riveted in said cheeks. Fig. 4 shows a roll like Fig. 3, except that a sleeve of the wood disk extends through each of the leather disks. Fig. 5 shows a roll like Fig. 4, except that the axial metal tube is not employed, and the metal disks are secured in place by rivets, which are arranged near the periphery, as shown in Figs. 2 and 5, and a sleeve-like projection of the central wood disk extends through the leather and metal disks and receives the pivot on which the roll revolves.

In said views, *a* represents a central disk of wood, and *b b* are disks of leather glued or cemented firmly to the disk *a*. Upon each outer face of the leather disks I arrange the metal disks *c*, which are preferably formed of sheet-steel, and, before being secured in place by the central metallic sleeve, *d*, as shown in Figs. 1, 3, 4, are slightly concaved upon the face next the leather, in order that the compressive force exerted by said sleeve, when its ends are expanded as a tubular rivet, may cause said disks, at their peripheries, to more firmly support the leather and prevent its lateral displacement from the wood.

In Figs. 4 and 5 sleeve-like projections *e* of disk *a* extend through the leather disk, as shown, and in said Fig. 5 said projections or sleeves also extend through the metal disks *c*, in which latter case said last-named disks are secured in place by rivets *f*, which pass entirely through the roll, as shown; and when said disks are so confined their concave side is placed outward, as the rivets secure their peripheries closely against the leather. The projections *e* possess the advantage of furnishing a firm seat for tube *d*, and also tend to support and secure the leather disks in proper position relatively to disk *a*, even though the connecting glue or cement should become impaired.

I do not herein broadly claim the employment of leather in skate-rollers, nor do I claim the method of securing the metallic disks in

position by a central sleeve or rivets, my invention consisting in the combination of wood and leather in such rolls and in the methods of carrying out the same; hence

5 I claim as my invention—

1. A skate-roller formed of wood disk *a* and leather disks *b b*, united and secured together substantially as specified.

2. In a skate-roll embodying the wood disk *a* and leather disks *b b*, a sleeve-like projection, 10 *e*, formed upon disks *a* and extending through the leather disks, substantially as specified.

EBEN B. MANSFIELD.

Witnesses:

EUGENE HUMPHREY,
EBEN HUTCHINSON.



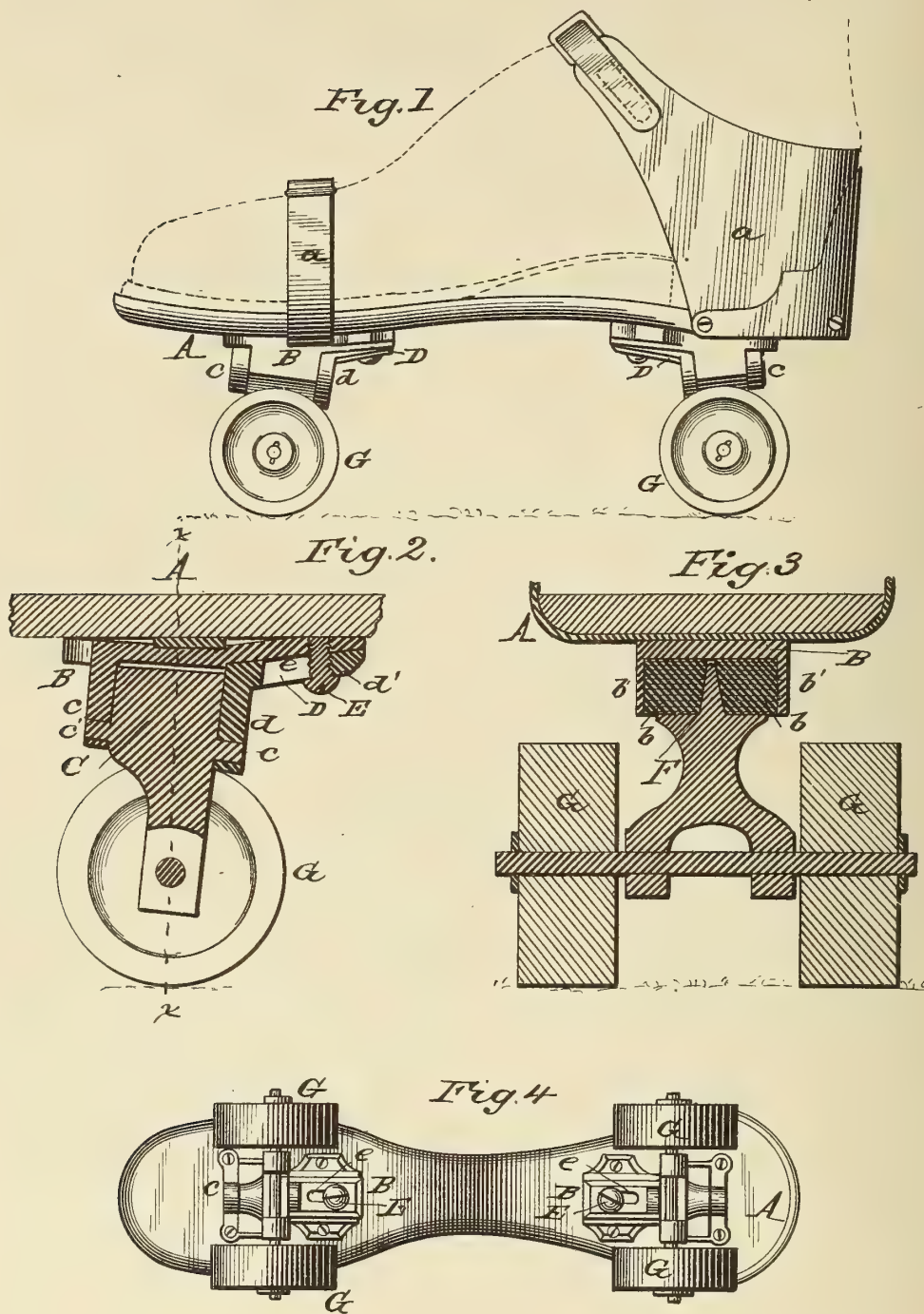
(No Model.)

A. L. KITSELMAN.

ROLLER SKATE.

No. 279,489.

Patented June 12, 1883.



WITNESSES:

Fred. H. Dieterich,
Victor J. Evans

INVENTOR,

Alva L. Kitzelman

By Dr Witt C Allen
ATTORNEY

UNITED STATES PATENT OFFICE.

ALVA L. KITSELMAN, OF RIDGEVILLE, INDIANA, ASSIGNOR OF ONE-HALF
TO DAVIS M. KITSELMAN, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 279,489, dated June 12, 1883.

Application filed April 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALVA L. KITSELMAN, a citizen of the United States, residing at Ridgeville, in the county of Randolph and State of Indiana, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in roller-skates, having for its object the production of skates that, while being strong, durable, and light to the feet of the wearer, an equal pressure is adapted to be brought to bear on the rubber cushions in whatever position the skates may assume, thus rendering them very easy and comfortable to the person wearing them; and to this end the invention consists in novel features of construction and combination and arrangement of parts, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

Referring to the accompanying drawings, Figure 1 represents a side elevation of my improved skate; Fig. 2, a longitudinal vertical central section through the rear or front portion of the skate; Fig. 3, a transverse vertical section through the dotted line *xx* of Fig. 2; and Fig. 4 is a bottom plan.

In the drawings, A represents the sole or foot plate of the skate, formed of wood or metal, as may be deemed expedient, and provided with the usual fastenings, *a a*, for securing it to the foot of the wearer. To the under side of the foot or sole plate A, and near the heel and toe, are secured metallic plates B B, each one having downwardly-projecting side flanges, *b' b'*, between which are placed rubber cushions *b b*. The outer end of each plate B has a downwardly-projecting perforated support, *c*, which forms one of the bearings for one of the journals, *c'*, of the seat C, the opposite journal, *c''*, having its bearing in the perforated vertical portion *d* of a right-angled support, D, having its horizontal portion *d'* dovetailed to fit in a corresponding groove in plate B, said horizontal portion having an oblong slot, *e*, through it, by which the right-angled support may be adjusted longitudinally

and secured in any desired position by the set-screw E. This adjustment of the right-angled support permits of the ready removal of the seat C, in order to put in or renew the rubber cushions without removing the skate from the foot of the wearer, or to take out or remove any of the operating parts when desired. The seat C has a central and upwardly-projecting beveled tongue, F, cast or formed integral therewith, and which passes between the rubber cushions *b b*, and is free to act as a pressure on said rubber cushions sidewise in the rocking of the skate, while the seat C acts as a vertical pressure on the rubber cushions, so that while the seat C on one side of the tongue has a direct vertical pressure on one of the rubber cushions the tongue will at the same time have a direct side pressure on the other or opposite rubber cushion, thereby making a double or equal pressure on both rubber cushions at the same time in the rocking movement of the skate, which, in connection with only side flanges, between which the rubber cushions are placed, and leaving the ends open, the rubber cushions have the necessary room to expand, thus enabling the skate to rock laterally with more ease and freedom of movement to the foot of the wearer than if said cushions were inclosed in a box, as heretofore. The seat C is provided with the usual downwardly-projecting forked or bifurcated arms, which form the bearings for the transverse shaft, upon which the floor-wheels G G are mounted in the usual manner.

My improved skate, while possessing strength and durability, involves simplicity as well as cheapness in construction, and which is adapted to rock sidewise or laterally with a freedom of movement that is easy and light upon the foot of the wearer.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination of the metallic plate B, having side flanges, *b' b'*, the rubber cushions *b b*, arranged between said flanges, and the rocking seat C, journaled below the cushions and having a central vertical tongue, F, projecting upwardly between said cushions, substantially as and for the purpose herein shown and described.

2. In a roller-skate, the combination of the metallic plate B, having end supporting-bearing, *c*, and opposite adjustable bearing, *d*, and side flanges, *b' b'*, the rubber cushions *b b*, and
5 the rocking seat C, having a central vertical tongue, F, and journals *c' c'*, substantially as and for the purpose herein shown and described.

3. In a roller-skate, the combination of the
10 metallic plate B, having end supporting-bearing, *c*, side flanges, *b' b'*, and dovetailed groove therein, the rubber cushions *b b*, arranged between said side flanges, right-angled, dove-tailed, and adjustable bearing-support D, and

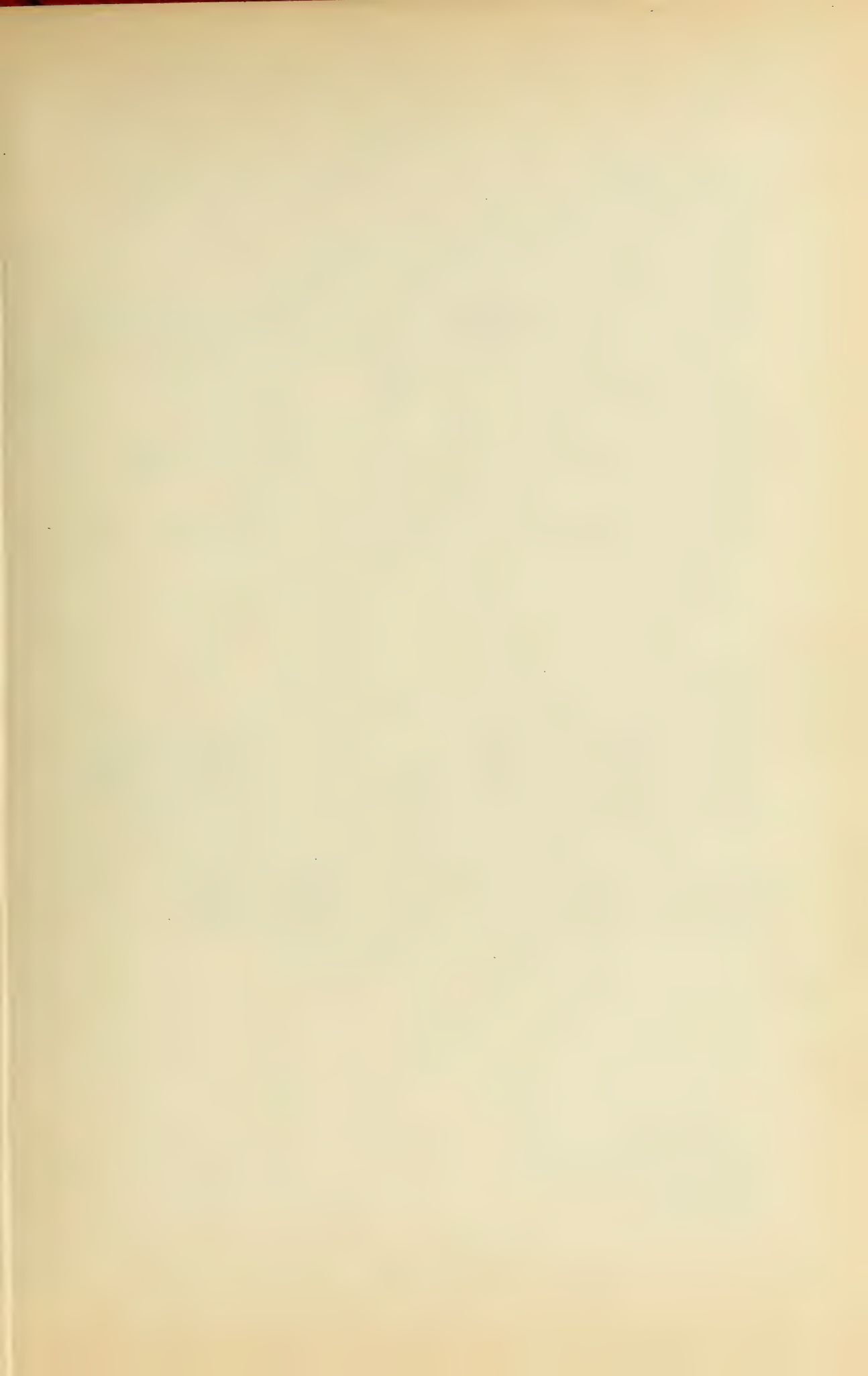
the rocking seat C, having journals *c' c'*, a cen- 15
tral vertical tongue, F, projecting upward between said rubber cushions, and the floor-wheels connected to said seat, the several parts constructed and arranged relatively to each other substantially in the manner as and for 20
the purpose herein shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

ALVA L. KITSELMAN.

Witnesses:

HENRY KIRKPATRICK,
G. D. WILLIAMSON.

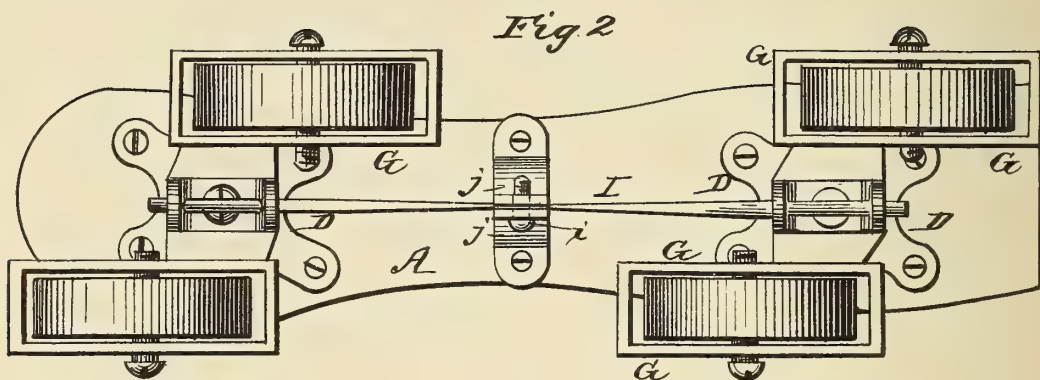
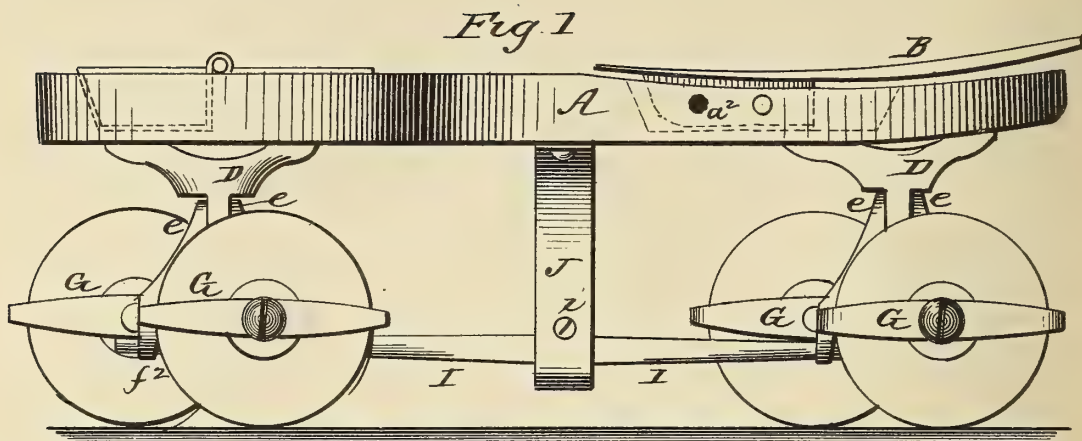


E. C. PHILLIPS.

ROLLER SKATE.

No. 280,236.

Patented June 26, 1883.



WITNESSES:
Fred G. Dieterich
H. L. King

INVENTOR
Edwood C. Phillips
De Witt C. Allen
ATTORNEY

E. C. PHILLIPS.

ROLLER SKATE.

No. 280,236

Patented June 26, 1883.

Fig. 4.

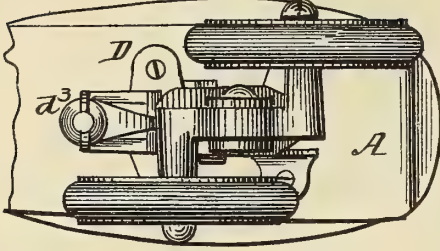


Fig. 5.

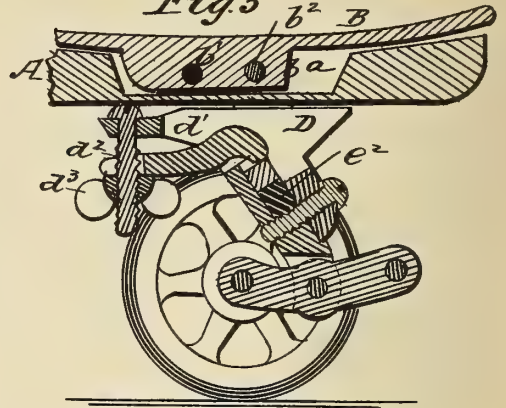


Fig. 3.

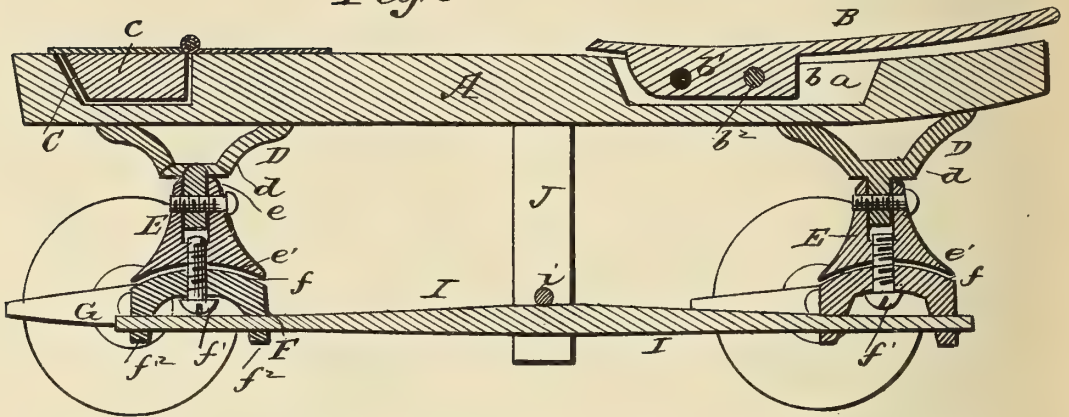
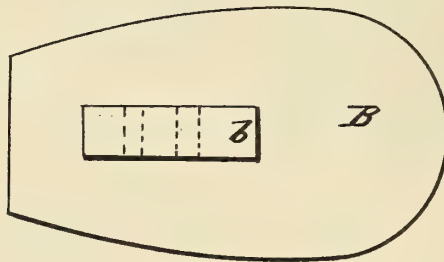


Fig. 6.



WITNESSES:
Fred. J. Dieterich
N. J. King

INVENTOR.
Edwood C. Phillips
De Witt C. Allen
ATTORNEY

UNITED STATES PATENT OFFICE.

ELWOOD C. PHILLIPS, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 280,236, dated June 26, 1883.

Application filed May 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD C. PHILLIPS, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in roller-skates, and more particularly to the class wherein the skates are adapted to have a rocking motion; and the object thereof is to generally improve the construction of such skates, so that they will be strong, durable, and light to the feet of the wearer, and which will work with great ease and comfort to the person wearing them, while being readily adapted to light and heavy persons; and to this end the invention consists in novel features of construction and combination of parts, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

Referring to the accompanying drawings, Figure 1 is a side view; Fig. 2, a bottom plan view; Fig. 3, a longitudinal vertical section, and Figs. 4, 5, and 6 are detail views.

In the drawings, A represents the usual sole or foot plate, having a depression, *a*, made on its upper and forward surface for the reception of a plate, B, having on its under side a projection, *b*, which fits into a corresponding recess, *a*, in the sole or foot plate. The projection *b* has a series of transverse holes, *b'*, through it, and the sole or foot plate has also a transverse hole, *a''*, through it, and through which passes a pivot-pin, *b''*, for connecting the plates A and B. The object of the plate B is to allow freedom of motion to the foot of the wearer, while the series of holes through the projection *b* of said plate permits of its longitudinal adjustment to suit different-sized feet.

The sole or foot plate is provided at its rear end and in its upper surface with a recess, C, for the reception of the heel of the boot or shoe of the wearer, and a thick hinged door, *c*, for covering the recess when desired, and which, when thrown open and forward, will form a shank-support for the foot of the wearer.

To the under side of the heel and toe of the sole or foot plate are secured metallic plates D, having downwardly-projecting arms *d*, pivotally connected to and between the forked arms *e* of the metallic blocks E, having concave under surfaces *e'* for the reception of the convex surfaces *f* of the plates F, which are connected to said blocks by screws *f'*. These plates F are provided on their outer or opposite sides with forwardly and rearwardly slotted plates G for the reception of the floor-wheels H, mounted on shafts *h*, supported in bearings through or on the opposite sides of said plates G, all as clearly shown in Fig. 2, and which, in connection with the plates F, form what is termed "crank-axles," by which the floor-wheels on one side of the plates F are thrown forward or in advance of the floor-wheels on the opposite side of said plates, or out of line with each other, by means of which the floor-wheels are free to oscillate, first one wheel and then the other, in passing over obstructions, thereby obviating to a great extent the jar and strain usually attendant in roller-skates where the floor-wheels are on the same line. By means of the slotted plates G, for the reception of the floor-wheels, the latter are supported on the inner and outer sides, instead of being supported by pins or screws on one side only, upon which there is always a strain on the skate, that cuts the wheels and wears out the pins or screws.

The plates F are provided with slotted lugs *f''*, through which pass the ends of a longitudinal spring-bar, I, by which said plates are connected together. The bar I, while acting as a spring, also acts as a buffer, and steadies and holds the flexible crooked axles in place, and guides and controls the skate.

J represents a central brace, which holds the spring-bar in position, and which is composed of two parts, *j j*, pressed together near their lower or free ends by a set-screw, *i*, which can be adjusted for loosening or tightening said parts for decreasing or increasing the spring-bar I for heavy or light persons.

The inner portions of the plates D are provided with extensions *d'*, and central pivoted pressure-levers, *d''*, are connected thereto, and operated by thumb-screws *d'''*, for the purpose of increasing or decreasing the pressure on

the rubber blocks e^2 , that regulate the side rocking of the skate, as shown in Fig. 5. This latter construction is used in connection with the spring-bar I when deemed expedient.

5 When either of the wheels passes over any small obstructions, there is a degree of elasticity imparted to it by reason of the spring in the connecting-bar I, that acts as a cushion and thereby softens the jar, because in passing
10 over such obstructions by only one wheel the bar is susceptible of a slight twisting action, as well as an upward spring action that will soften or lessen the jar or jolt.

Having thus fully described my invention,
15 what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the plate F, provided with slotted supporting-plates G, arranged on opposite sides thereof, and one in advance of
20 the other, or out of line, for the reception of the floor-wheels, substantially as and for the purpose herein shown and described.

2. In a roller-skate, the combination, with the forward and rear floor-wheels having their
25 axes out of line with each other, of the intermediate connecting spring-bar, I, and central brace, J, substantially as and for the purpose herein shown and described.

3. In a roller-skate, the combination, with
30 the forward and rear floor-wheels having their axes out of line with each other, of the intermediate connecting spring-bar, I, and central brace, J, formed in two parts and adjustably connected together, substantially as and for
35 the purpose herein shown and described.

4. In a roller-skate, the combination, of the

forward and rear floor-wheels, the wheels on one side of the skate arranged in advance or forward of the wheels on the opposite side of the skate, and an intermediate connecting-bar, I, substantially as and for the purpose herein
40 shown and described.

5. In a roller-skate, the combination of the plate D, having extension d' , pivoted block E, intermediate rubber block, e^2 , and centrally-
45 pivoted and adjustable pressure-lever a^2 , substantially as and for the purpose herein shown and described.

6. The combination, with the sole or foot plate A, of the pivoted plate B, substantially
50 as and for the purpose herein shown and described.

7. The combination, with the sole or foot plate A, of the pivoted and longitudinal adjustable plate B, substantially as and for the
55 purpose herein shown and described.

8. The sole or foot plate A, having a recess, C, for the reception of the heel of the boot or shoe of the wearer, and the hinged door c , sub-
60 stantially as herein shown and described.

9. The sole or foot plate A, provided with the heel-recess C and hinged door c , substantially as and for the purpose herein shown and described.

In testimony whereof I affix my signature in
65 presence of two witnesses.

ELWOOD C. PHILLIPS.

Witnesses:

WILLIAM H. OGBORN,
JOSEPH MARCHANT.

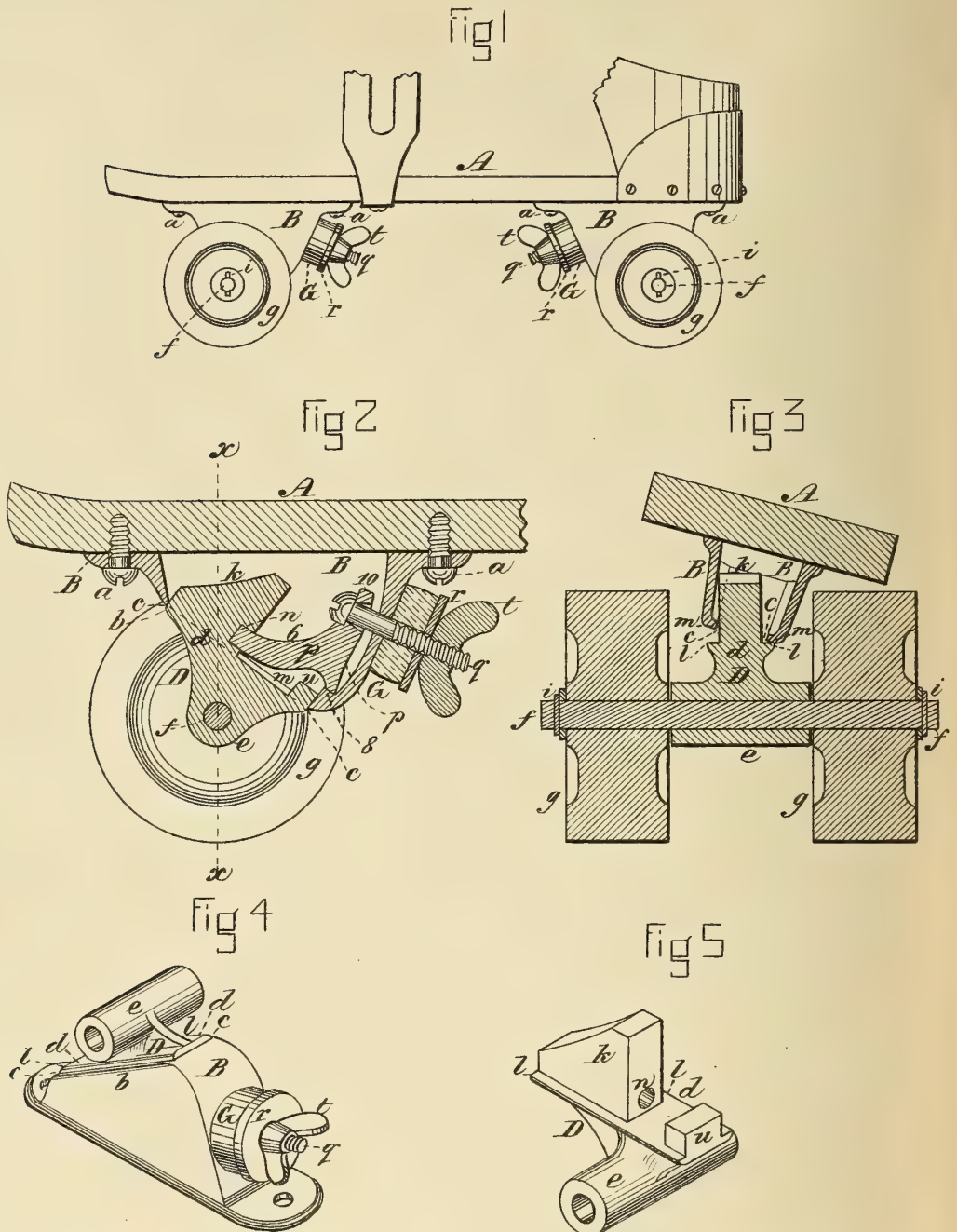
(No Model.)

L. J. BAKER.

ROLLER SKATE.

No. 280,338.

Patented July 3, 1883.



WITNESSES

W. J. Cambridge
Chas. E. Griffin

INVENTOR

Loring J. Baker
per R. Schumacher
Atty

UNITED STATES PATENT OFFICE.

LORING J. BAKER, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 280,338, dated July 3, 1883.

Application filed April 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, LORING J. BAKER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Roller-Skates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a roller-skate constructed in accordance with my invention. Fig. 2 is a longitudinal section (enlarged) through one of the hangers and parts connected therewith. Fig. 3 is a transverse section on the line *xx* of Fig. 2, with the parts in a different position. Fig. 4 is a perspective view of one of the hangers and its roller-carrier inverted. Fig. 5 is a perspective view of the roller-carrier detached.

Roller-skates as heretofore constructed, in which the hanger is provided with a pivoted or swiveling roller-carrier, and a rubber block or spring interposed between said carrier and the foot-plate, are objectionable for the reason that the rubber block soon becomes indented or permanently reduced in thickness upon one side by the action thereon of the roller-carrier, which, by the movements of the skater, is usually inclined more frequently on one side than on the other, in consequence of which the rubber spring soon fails to return the roller-carrier to its proper central position or level, and the latter becomes loose on its pivots and continually inclines to one side, which seriously interferes with the proper movements of the skater. Moreover, when the rubber spring becomes worn or compressed out of shape, the parts cannot be tightened up and a new spring must be inserted.

My invention has for its object to overcome these difficulties; and it consists in certain details of construction and combinations of parts, whereby the desired end is attained, as hereinafter fully explained and specifically claimed.

In the said drawings, A represents the foot-plate of a roller-skate, and B one of the hangers, which is made hollow and secured to the plate A by means of screws *a*.

The inclined side *b* of the hanger B is provided with a rectangular opening, *c*, within which fits the correspondingly-shaped portion *d* of the roller-carrier D, which is provided

with the usual elongated tubular bearing, *e*, for holding the axle *f*, upon the opposite ends of which are mounted the skate-rollers *g g*, secured in place by pins *i*.

The portion *d* of the roller-carrier D is provided with a projection, *k*, which extends into the hollow hanger B, and on each side of the projection *k* is a longitudinal flange or shoulder, *l*, which rests on the adjacent edge *m* of the opening *c* in the hanger, and within a recess, *n*, in the projection *k* fits the end of the arm 6 of a bell-crank lever, *p*, by means of which the roller-carrier is connected with the hanger and held securely thereto. This lever *p* has its fulcrum at 8, where it rests upon a shoulder formed on the inside of the hanger, and through an aperture in the arm 10 of this lever passes a screw, *q*, which also passes through the end of the hanger, outside of which it is encircled by a spring, G, composed of a disk or block of rubber confined between the end of the hanger and a washer, *r*, and over the threaded portion of the screw, outside the washer *r*, fits a thumb-nut, *t*, by turning or adjusting which the rubber spring can be compressed more or less, thus holding the roller-carrier more or less firmly in place within the hanger, as required.

At one end of the portion *d* of the carrier is a projection, *u*, which fits within the aperture *c* at one end thereof, and prevents the carrier from having any play or loose motion in the direction of the length of the opening *c*.

When, during the movements of the skater, the roller-carrier D is rocked or pressed over to one side or the other with respect to the hanger, one of the shoulders or flanges *l* takes a solid bearing on the contiguous side *m* of the opening *c*, which forms a fulcrum therefor, causing the opposite flange *l* of the carrier to be forced out from the adjacent edge of the opening *c*, as seen in Fig. 3. This movement of the carrier D, whether to the right or left, produces a downward draft on the arm 6 of the lever *p*, which, through the screw *q*, washer *r*, and nut *t*, causes the rubber block or spring G to be subjected to a square and equal compression over its entire surface, thus entirely avoiding the unequal wear or permanent reduction in thickness of the spring on one side more than on the other, as heretofore, while with my improved construction the durability of the

spring is greatly increased, and it is enabled to always return the roller-carrier to its proper central position, with respect to the hanger and foot-plate, after having been pressed over
 5 to one side or the other, and hold it steadily and firmly in place, as desired, and by turning the thumb-nut *t* any desired degree of elastic pressure can be put upon the lever *p* to cause it to hold the roller-carrier up to the
 10 hanger with more or less force, as required. The projection *k*, which fits within the hollow hanger, strikes against the sides of the interior thereof when the roller-carrier is rocked, as seen in Fig. 3, and thus serves to limit its lat-
 15 eral movement with respect to the hanger.

I do not confine myself to the precise construction and arrangement of the lever for connecting the roller-carrier with the spring, as shown, as these may be varied without departing from the spirit of my invention; but
 20 in all cases the connection between the roller-carrier and the spring must be such that a lateral or rocking movement of the roller-carrier in either direction will produce a square and
 25 even compression of the spring, as above described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination, with the hollow hanger B, attached to the foot-plate
 30 A, of the swiveling or rocking roller-carrier D, provided with a projection, *k*, and having flanges or shoulders *l*, adapted to bear upon the opposite sides *m* of the hanger as the carrier is rocked to one side or the other, the lever
 35 *p*, screw *g*, spring G, and adjusting-nut *t*, all constructed to operate substantially in the manner and for the purpose described.

2. In a roller-skate, the combination, with the hanger B and the swiveling roller-carrier
 40 D, with its projection *k* fitting within the hanger, of the bell-crank lever *p*, having one arm connected with the projection *k*, and the other arm connected with a spring, G, adapted to be squarely and evenly compressed by the rock-
 45 ing movement of the roller-carrier in either direction transmitted through the lever *p*, substantially as described.

Witness my hand this 17th day of April, A. D. 1883.

LORING J. BAKER.

In presence of—

P. E. TESCHEMACHER,
 W. J. CAMBRIDGE.

(No Model.)

W. B. HIGGINS.

ROLLER SKATE.

No. 280,821.

Patented July 10, 1883.

FIG. 1.

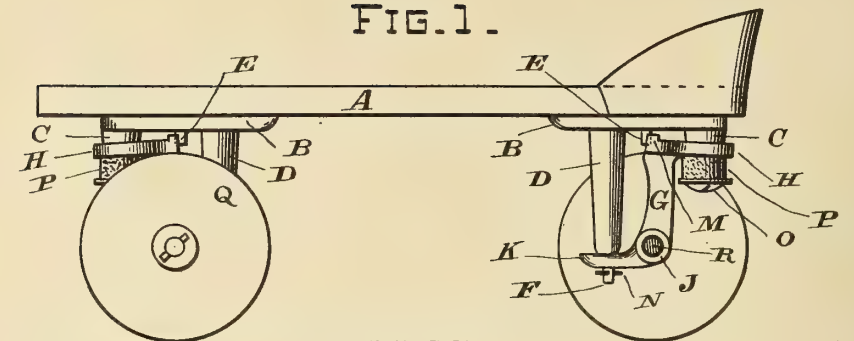


FIG. 2.

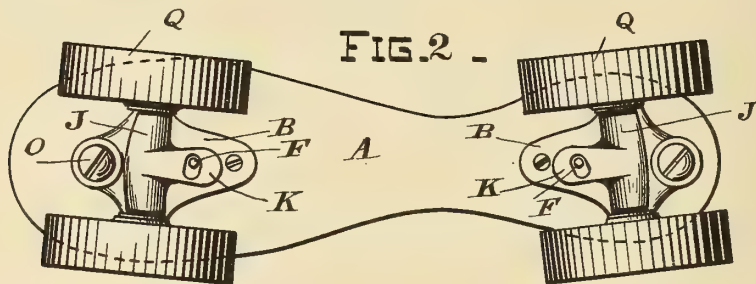


FIG. 3.

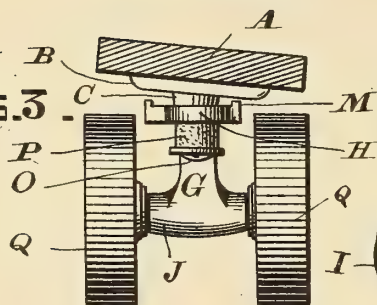


FIG. 4.

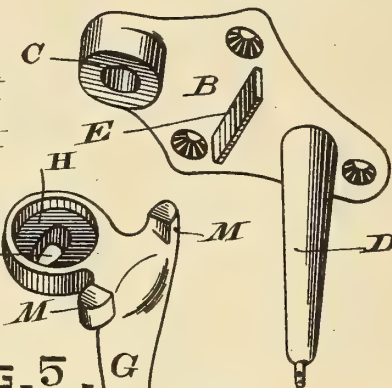
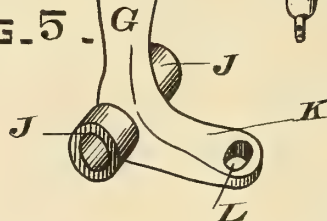


FIG. 5.



WITNESSES

Wilemer Bradford
Edwin Derby

INVENTOR.

Walter B Higgins.
Per Wm Smith
Attorney.

UNITED STATES PATENT OFFICE.

WALTER B. HIGGINS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO SIDNEY M. BALDWIN, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 280, '21, dated July 10, 1883.

Application filed April 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, WALTER B. HIGGINS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a certain new and useful Improvement in Roller-Skates; and I hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable oneskilled in the art to which my invention relates to make and use the same, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in that class of roller-skates in which the rollers are adjusted for curved lines by the action of the body of the skater in natural skating movements; and the objects of my improvement is to provide a self-adjusting hanger for the roller-axes attached to the foot-board plate in such a manner that the pressure of the skater's foot upon either the inside or outside edge of the skate-stock will cause the axles of the rollers to incline toward one another, or, in other words, to assume a radial position coincident to the radius of the arc or curve being traveled upon. This object I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a roller-skate embodying my invention. Fig. 2 is a bottom view, showing the position of the wheels when in the act of turning a curve. Fig. 3 is an edge view of one of the trucks when turning a curve. Fig. 4 is a perspective view of one of the standards, and Fig. 5 is a perspective view of one of the hangers.

Similar letters of reference are used to indicate like parts throughout the several views.

A is the stock or foot-board, which is provided with the customary straps or other devices for securing it to the skater's boot. At each end of the stock, and on the under side thereof, I firmly secure a plate, B, which is provided at one end with a stud, C, and at the opposite end with a post or standard, D, while midway between the two, and extending transversely across the plate, is constructed a rib or projecting tenon, E. The standard D is rounded off at the lower end, and has an extension or pintle, F, projecting downwardly, as shown in Fig. 4.

The hanger or roller-carrying frame G is made in the form shown in Fig. 5, having a cup-shaped recess, H, the base of which is perforated by a slot, I, the said recess being adapted to partially receive the stud C upon the plate B, as shown in Fig. 1. The lower end of the shank of this hanger is provided with an axle-bearing, J, extending at right angles to the shank and transversely to the stock or foot-board. The lower end of the shank is also bent lengthwise at right angles, and forms a tongue or step, K, in which a slot, L, is made for the reception of the pintle F. Studs or lugs M M are cast upon opposite sides of the top face of the hanger and directly over the axle-bearing J, and the oscillation or swiveling capacity of the truck or hanger is regulated by the length of the rib E and the distance between the studs M M, which are so arranged as to come opposite each end of the rib. When the hanger is placed in position upon its bearing-plate, the pintle F projects through the slot L in the tongue or step K, and a key or pin, N, is employed to keep it in position.

The stud C is received within the socket H, and a screw, O, having a thick india-rubber washer, P, is inserted through the slot I and screwed into the stud C, by which means the two portions are securely yet loosely connected together.

It should here be remarked that the truck-carriages are so placed upon the stock that the standards D and the tongues K will face each other.

The mode of operation of my improved roller-skate will be as follows, to wit: The rollers Q are arranged so as to turn independently of each other upon the axles R, and when the skater is moving in a straight line and the pressure of his foot comes upon the central line of the stock the rollers will stand in a straight fore-and-aft position. Should the operator desire to move in a curved line, the natural leaning of the body or the pressure of his foot upon that side or edge of the stock next to the center of the curve upon which he is traveling will cause the standards D to be deflected from a perpendicular line, throwing the lower end of the said standard outwardly. This movement will cause the tongues K to be

similarly deflected, and the hangers G, in moving upon their pivotal points or studs C and screw-bolts O, will cause the inner ends of the wheel-axles to converge or approach each other and assume a radial position to the curve being traveled upon at the time; and the thick elastic washer P will permit of sufficient "give" or torsional play of the stud C within its socket to admit of the necessary side inclination of the stock without raising either roller from the floor, as seen in Fig. 4, thus enabling the skater to keep a firm foothold and to turn curves with great ease and facility.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The hanger G, provided with a flat-bottomed slotted cup H, adapted to receive the post or stud C of the plate B, in which it operates, substantially in the manner as herein set forth and specified.

2. In a roller-skate, the plate B, provided

with a stud, C, and post D, in combination with the hanger G, having a flat-bottomed slotted cup adapted to receive the stud C, and be united by the set-screw O, passing through a rubber spring or packing, P, constructed, arranged, and operating substantially in the manner as herein set forth and specified.

3. In a roller-skate, the bearing-plate B, having a stud, C, rib E, and standard D, in combination with the hanger G, having lugs M M, and suitable axle-bearings, J, slotted tongue K, and socket H, adapted to be pivoted to the frame B by a set-bolt, O, having an elastic washer, P, the whole constructed and arranged to operate substantially in the manner and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

WALTER B. HIGGINS. [L. s.]

Witnesses:

C. W. M. SMITH,
CHAS. E. KELLY.

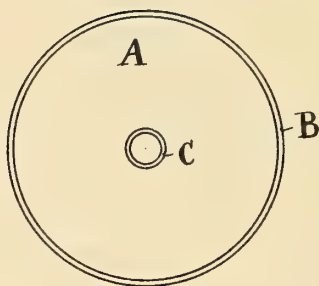
(No Model.)

O. E. WAIT.

CASTER FOR ROLLER SKATES AND FURNITURE.

No. 281,324.

Patented July 17, 1883.



Witnesses.

W. Blanta
Benj P. Ryder.

Inventor

Oscar E. Wait
by Charles H. Brewster
attorney

UNITED STATES PATENT OFFICE.

OSCAR E. WAIT, OF PROVIDENCE, RHODE ISLAND.

CASTER FOR ROLLER-SKATES AND FURNITURE.

SPECIFICATION forming part of Letters Patent No. 281,324, dated July 17, 1883.

Application filed August 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, OSCAR E. WAIT, of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Casters for Roller-Skates and Furniture, of which the following is a specification.

The object of my invention is to provide a caster which shall resist the wear to which it is subjected, have a certain degree of elasticity, make little or no noise when in use, and have a self-lubricating and durable bearing.

Casters as now ordinarily made, especially on roller-skates, are subjected to very hard usage, which in a comparatively short time wears them out, so that they have to be renewed; also, it is necessary, or very desirable, to provide some means of lubricating the bearings, which is now done in a manner much more expensive and inconvenient than that invented by me, and no means, so far as I know, exist for making the bearings durable. These difficulties are all overcome by my invention. Another advantage in the use of my casters consists in the fact that their edges will not cut the floor upon which they are used, as is the case with most of the casters now in use—such as those made of lignum-vitæ and other hard woods.

In the drawing I have shown a plan of a caster embodying my invention.

A is a wooden caster or roller of the ordinary form, made slightly smaller than the caster is designed to be when finished.

B is a band of rawhide, forming an outer covering or rim over the whole periphery of the caster. This is applied as follows: A piece of rawhide of the proper size and shape is to be softened by soaking in water. It is then to be dried until nearly all the water is expelled. It is then to be split to the proper thickness, coated with glue or other adhesive substance, preferably Russia cement. It is

then to be wound, preferably twice, around the wooden roller, dried, and finished in a lathe.

C is a bushing of rawhide, placed within the hole in the center of the caster, which is to form the bearing. This bushing extends the whole length of the bearing. It is to be made as follows: A core made of wire of the proper size, having an eye in each end, is to be provided, on which a piece of rawhide, split or shaved to the proper thickness and moistened sufficiently, to make it pliant, is to be wound spirally. The object of the eyes is to hold the ends of the strip of rawhide while it is being wound. When dried the core is to be removed. The roll of rawhide is then to be coated with glue or other adhesive substance and a section of the proper length cut from it, which section is to be inserted in the hole in the center of the wooden roll; or the roll of rawhide may be first inserted and the section cut off after it has been thus put in. This bushing not only protects the caster by resisting the action of the axle, which would otherwise wear the caster away, but also, by reason of its nature, acts as a lubricator.

What I claim, and desire to secure by Letters Patent, is—

1. The improved caster composed of the roller A, the rawhide rim B, and the rawhide bushing C, substantially as above described.

2. A caster for roller-skates and furniture provided with an outer covering or rim of rawhide, substantially as above described.

3. A caster for roller-skates and furniture provided with a rawhide bushing, substantially as described.

OSCAR E. WAIT.

Witnesses:

CHAS. F. PERKINS,
CHAS. ELI DREW.

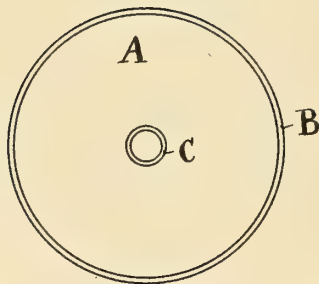
(No Model.)

O. E. WAIT.

CASTER FOR ROLLER SKATES AND FURNITURE.

No. 281,324.

Patented July 17, 1883.



Witnesses.

W. Blanta
Benj P. Ryder.

Inventor

Oscar E. Wait
by Charles E. Crew
attorney

UNITED STATES PATENT OFFICE.

OSCAR E. WAIT, OF PROVIDENCE, RHODE ISLAND.

CASTER FOR ROLLER-SKATES AND FURNITURE.

SPECIFICATION forming part of Letters Patent No. 281,324, dated July 17, 1883.

Application filed August 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, OSCAR E. WAIT, of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Casters for Roller-Skates and Furniture, of which the following is a specification.

The object of my invention is to provide a caster which shall resist the wear to which it is subjected, have a certain degree of elasticity, make little or no noise when in use, and have a self-lubricating and durable bearing.

Castors as now ordinarily made, especially on roller-skates, are subjected to very hard usage, which in a comparatively short time wears them out, so that they have to be renewed; also, it is necessary, or very desirable, to provide some means of lubricating the bearings, which is now done in a manner much more expensive and inconvenient than that invented by me, and no means, so far as I know, exist for making the bearings durable. These difficulties are all overcome by my invention. Another advantage in the use of my casters consists in the fact that their edges will not cut the floor upon which they are used, as is the case with most of the casters now in use—such as those made of lignum-vitæ and other hard woods.

In the drawing I have shown a plan of a caster embodying my invention.

A is a wooden caster or roller of the ordinary form, made slightly smaller than the caster is designed to be when finished.

B is a band of rawhide, forming an outer covering or rim over the whole periphery of the caster. This is applied as follows: A piece of rawhide of the proper size and shape is to be softened by soaking in water. It is then to be dried until nearly all the water is expelled. It is then to be split to the proper thickness, coated with glue or other adhesive substance, preferably Russia cement. It is

then to be wound, preferably twice, around the wooden roller, dried, and finished in a lathe.

C is a bushing of rawhide, placed within the hole in the center of the caster, which is to form the bearing. This bushing extends the whole length of the bearing. It is to be made as follows: A core made of wire of the proper size, having an eye in each end, is to be provided, on which a piece of rawhide, split or shaved to the proper thickness and moistened sufficiently, to make it pliant, is to be wound spirally. The object of the eyes is to hold the ends of the strip of rawhide while it is being wound. When dried the core is to be removed. The roll of rawhide is then to be coated with glue or other adhesive substance and a section of the proper length cut from it, which section is to be inserted in the hole in the center of the wooden roll; or the roll of rawhide may be first inserted and the section cut off after it has been thus put in. This bushing not only protects the caster by resisting the action of the axle, which would otherwise wear the caster away, but also, by reason of its nature, acts as a lubricator.

What I claim, and desire to secure by Letters Patent, is—

1. The improved caster composed of the roller A, the rawhide rim B, and the rawhide bushing C, substantially as above described.

2. A caster for roller-skates and furniture provided with an outer covering or rim of rawhide, substantially as above described.

3. A caster for roller-skates and furniture provided with a rawhide bushing, substantially as described.

OSCAR E. WAIT.

Witnesses:

CHAS. F. PERKINS,
CHAS. ELI DREW.

(No Model.)

G. D. BURTON.

ROLLER SKATE.

No. 282,156.

Patented July 31, 1883.

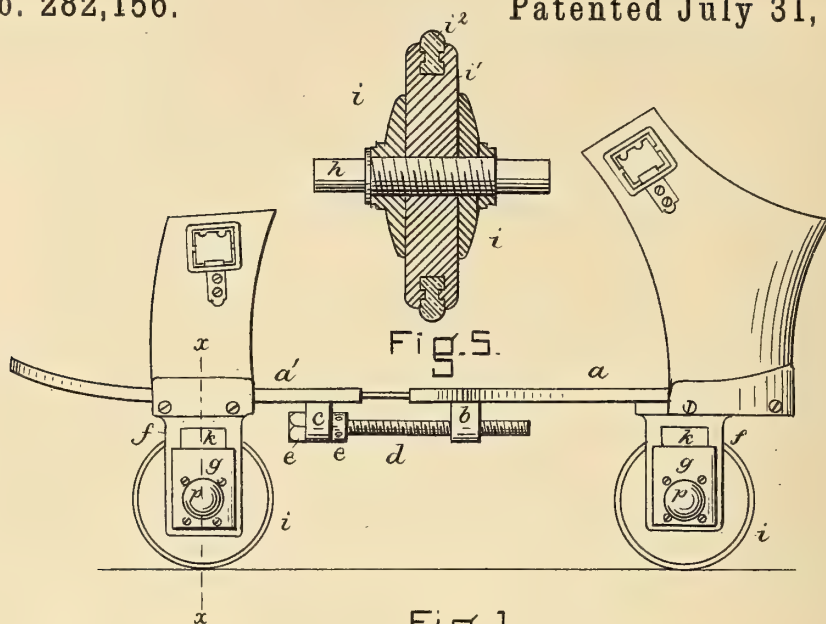


Fig. 1.

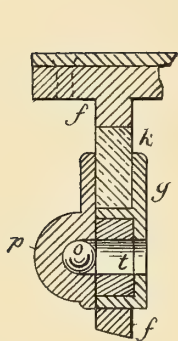


Fig. 4.

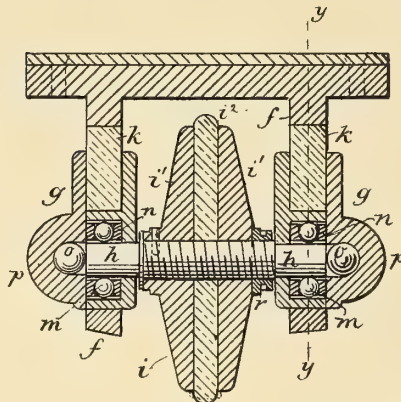


Fig. 2.

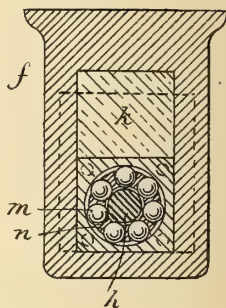


Fig. 3.

WITNESSES

Albert W. Hann
J. L. Holden

INVENTOR

INVENTOR
Geo. S. Ruston

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 282,156, dated July 31, 1883.

Application filed January 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relating to roller-skates has for its object to produce a skate having its rollers bear upon the floor in line with one another in a narrow space, and with their axes of rotation unchanged in angular position relative to the body of the skate, so that the operation will be almost the same as that of the runner of a skate used upon ice.

The rollers or wheels of the roller-skate have heretofore had broad peripheries, so as to give as large a bearing portion as possible to prevent them from cutting the floors; and this construction necessitates a rocking movement of the body of the foot-receiving portion of the skate relative to the rollers, which have to remain in a substantially vertical position, and which, in consequence, also have their axes movable, so as to enable them to move in curved paths, the angular position of the axle being changed by rocking the body of the skate upon the rollers.

The rollers of the skate forming the subject of the present invention have the bearing portion of their peripheries of soft rubber, projecting slightly beyond the body of the roller, which is of hard material, the said rubber thus compressing or spreading out sufficiently to afford a considerable bearing-surface, and being, moreover, of such soft nature as not to cut the floors, while the proximity of the hard material forming the body of the roller and projecting laterally at either side of the rubber, prevents the latter from spreading sufficiently to impede the movement of the skate to an objectionable degree. The axles of the rollers bear upon a series of balls contained in an annular chamber in bearing-boxes mounted on pedestals at either side of the skate beneath the heel and ball of the foot of the wearer, springs being interposed between the said bearing-boxes and the body of the skate, to absorb the jar derived from the uneven surfaces. The pedestals guide the bearing-boxes,

which thus have a vertical movement to and from the body of the skate as the springs yield, but in the said movement always remain parallel, or, in other words, never change their angular position relative to the skate-body. Balls are also placed at the ends of the axles to receive the end-pressure when the skate and roller are inclined from the vertical position. The body of the skate is divided in two portions, one of which receives the heel and the other the ball of the foot of the wearer, the said portions being movable relative to one another, and adjusted by means of a bolt, so as to vary the length of the skate to fit the foot of the wearer; but thus broadly stated such a skate is old, and my invention relates to a particular means, as hereinafter specified and claimed, for accomplishing the object stated.

Some features of the present invention are the same as shown and claimed in a former application filed by me November 17, 1882, and are not claimed in the present application.

Figure 1 is a side elevation of a skate embodying this invention; Fig. 2, transverse section thereof on line *x x*, on a larger scale; Fig. 3, a vertical section on line *y y*, Fig. 2; Fig. 4, a modification of the bearing for the roller-axle, and Fig. 5 a sectional view of a modified form of roller.

The body of the skate is made in two portions, *a a'*, the former adapted to receive the heel and the latter the ball portion of the foot of the wearer, the said portions being movable toward and from one another, by means substantially as follows: The portion *a* is provided with an internally-threaded lug or nut, *b*, and the portion *a'* with a lug or socket, *c*, co-operating with a bolt, *d*, working in the nut *b*, and having a rotary movement in the socket *c*, its longitudinal movement being prevented by collars *e*, one of which may be squared or otherwise adapted to receive a key or wrench for rotating the said bolt, and thus adjusting the length of the skate. Each portion *a a'* of the skate is provided at each side with bearing-pedestals *f*, having a passage which receives and serves as a guide for the bearing-boxes *g* of the axles *h* of the rollers *i*, permitting them to move toward and from the skate-

body without change in angular position relative thereto. Springs or cushions *k* are inserted in the pedestals *f*, above the boxes *g*, to absorb jar caused by the roller passing over an uneven surface and prevent it from being transmitted to the wearer of the skate. The bearing-boxes *g* are provided with an annular chamber containing a series of balls, *m*, surrounding and forming a bearing for the axles *h*, the said balls being kept apart by a ring, *n*, having sockets to receive the said balls, which are thus prevented from rubbing against one another as they revolve in the spaces between the axles and bearing-boxes. The ends of the axles *h* rest against balls *o*, held in chambers *p* at the end of the bearing-boxes, and serving as pivots to receive end pressure of the axle *h*, when the skate, with its roller, is inclined from the vertical position.

The rollers *i* consist of a body-portion, *i'*, of wood, metal, or other hard material, and the bearing portion *i''* of rubber projecting radially beyond the said hard portion, which is thus prevented from coming in contact with the floor, the said projecting portion of the rubber being expanded laterally and overlying the edges of the hard portion when pressure is brought upon it. The hard portion *i'* of the skate preferably consists of two flanges, as shown in Fig. 2, one of them being fixed upon the axle *h*, and the other movable longitudinally thereon and adapted to be pressed toward the other by a nut, *r*, mounted upon the axle *h*, which is threaded to receive it. In this construction the bearing portion *i''* consists of a disk of rubber or equivalent yielding and preferably elastic material placed between the flanges *i' i'*, which are pressed together to hold the rubber securely and give it the requisite compression.

In the modification shown in Fig. 5 the rubber bearing portion consists of a band placed in a suitable-shaped socket in the periphery of the hard or main portion *i'* of the roller, the said hard portion projecting laterally at

either side of the rubber and preventing it from yielding too much.

In the modification shown in Fig. 4 the bearing-balls *m* and their separating-ring *n* are omitted and a bushing, *t*, of suitable material employed in their place.

I claim—

1. In a roller-skate, the body having independent sole and heel supporting portions, one provided with a nut and the other with a corresponding socket, combined with the adjusting-bolt *d*, working in the said nut, and having a rotary without longitudinal movement in the said socket, substantially as and for the purpose described.

2. The combination, substantially as shown and described, of the skate-body, the bearing-pedestals thereto attached, boxes movable in and guided by said pedestals, springs interposed between the boxes and pedestals, the roller-shafts journaled in said boxes, and rollers mounted by their said shafts in said boxes in line with one another and at about the middle of the skate-body, the said rollers consisting of a body of hard material and a narrow rim of yielding material, whereby the rollers have a cushioned movement toward and from the body of the skate without change in angular position relative thereto, as set forth.

3. The skate-body and bearing-pedestals fixed at either side thereof, combined with the rollers and their bearing-boxes guided by the said pedestals, as described, and the springs co-operating with the said boxes, whereby the rollers have a cushioned movement toward and from the body of the skate without change in angular position relative thereto, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. D. BURTON.

Witnesses:

JOS. P. LIVERMORE,
BERNICE J. NOYES.

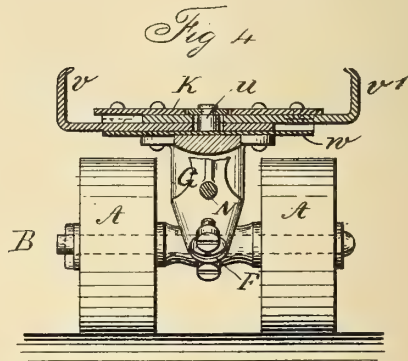
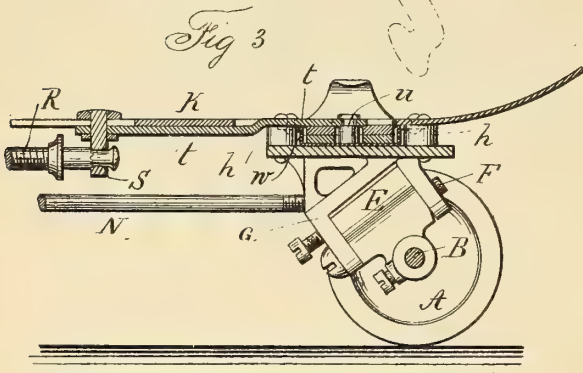
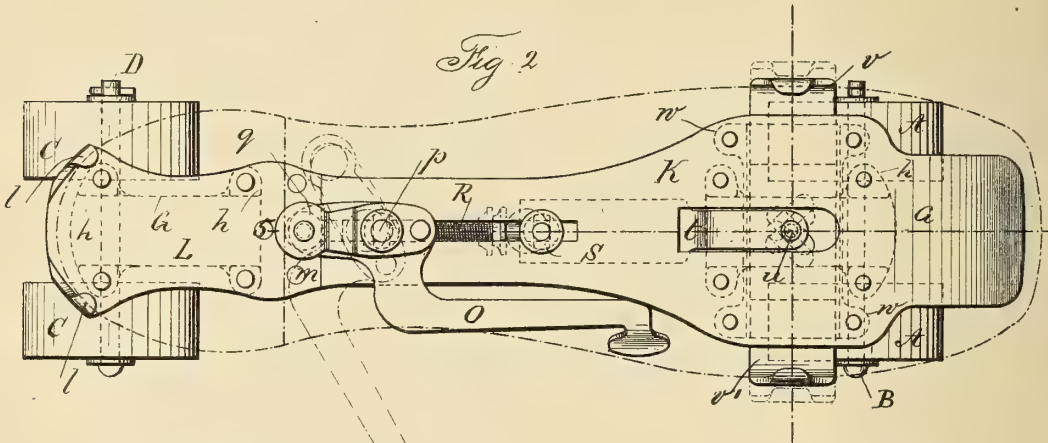
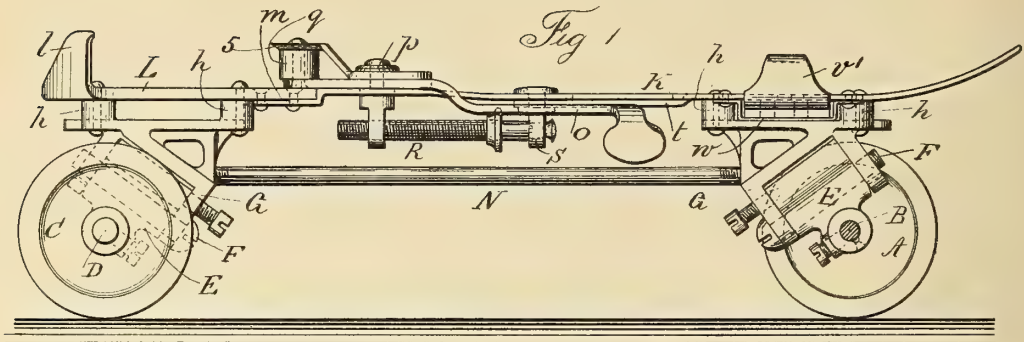
(No Model.)

W. J. MORRIS.

ROLLER SKATE.

No. 283,915.

Patented Aug. 28, 1883.



Witnesses
J. Staib
Chas. A. Smith

Inventor
William J. Morris
per Lemuel W. Perrell atty

UNITED STATES PATENT OFFICE.

WILLIAM J. MORRIS, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE UNION HARDWARE COMPANY, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 283,915, dated August 28, 1883.

Application filed May 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. MORRIS, of Torrington, in the county of Litchfield and State of Connecticut, have invented an Improvement in Roller-Skates, of which the following is a specification.

Roller-skates have been made with wooden sole-plates and straps for securing the same to the foot, and skates for ice have been secured to the sole of the boot or shoe by clamps operated by a lever. In ice-skates there is sufficient strength in the runner to allow for the use of separate sole and heel plates, the lever acting upon the respective clamps, and being between the sole and heel plates. In roller-skates the sole-plate is at a greater distance from the surface traveled over than in ice-skates; hence there is more leverage and strain upon the connecting parts. I obtain the required strength and grasping-power for securing the roller-skates to the sole of the boot or shoe by combining with the pairs of rollers, their stocks, and connecting-rod a sole-plate that extends from the front of the skate to the heel-plate, which heel-plate is thicker and stronger than the sole-plate, and the sole-plate is permanently connected thereto. By this construction I am enabled to use a regular style of heel-plate for different sizes of roller-skates and to use a sole-plate that is cut out by dies; but the shank is varied in length or cut off previously to being united to the heel plate, so that different lengths of skates are made by one set of tools, and the requisite strength is obtained for the skate, and lightness is secured.

In the drawings, Figure 1 is an elevation of the skate, one front roller being removed. Fig. 2 is a plan of the same. Fig. 3 is a section through the front clamps longitudinally, and Fig. 4 is a section of the clamps transversely of the skate.

The front rollers, A A, are upon an axle, B. The back rollers, C C, are upon an axle, D. Each axle is provided with a rocker-block, E, supported by the axis-screw F, that passes at an inclination through the rocker-block and through the jaws of the stock G. There is a block of rubber between the rocker-block and

the stock. The parts, however, have been made before, and, being known, do not require further description. The stock G, however, is made with reference to the introduction of the transverse clamps. The back and front stocks are by preference the same, as it is not necessary to make one stock different from the other, and the stock takes a broad and reliable bearing against the sole or heel plate, having the studs *h h* near the angles thereof, through which pass the rivets that secure the stocks to the respective sole and heel plates, and there is a space between the top of the stock and the under side of the sole-plate *k* for the transverse clamps hereinafter described.

The heel-plate L is made with the upright clamping-spurs *l*, with penetrating-lips turned inwardly toward the heel, so as to grasp the leather when the front of the heel is pressed. This heel-plate is preferably of wrought-iron or steel.

The sole-plate K is cut out by dies in the shape shown in Fig. 2, or nearly so. The shank, being long and having parallel sides, or nearly so, can be cut off or made of any desired length, so that the one die can be used for cutting out sole-plates adapted to several lengths of roller-skates. The back end of the sole-plate is riveted or otherwise secured to the front part of the heel-plate, as at *m*.

The rod N connects the respective stocks, the ends of the rod being screwed into the stocks. This serves to strengthen the parts.

The lever O swings upon a pivot-stud, *p*, and it carries at the shorter end a jaw with a roller, *q*, the rounded edge *5* of the jaw forming a holdfast that enters the leather at the front of the heel, and the roller presses against the same surface and clamps the heel between itself and the claws *l*.

The stud *p* passes through a slot in the shank of the sole-plate, and it has through it the screw R, that at the other end enters the stud S of the sliding plate *t*, the front part of which is in a slot in the sole-plate K, and it is provided with a stud, *u*, entering the diagonal slots in the sole-clamps *v v'*, that pass across the under side of the sole-plate, between the same and the

stock G, at front pair of rollers. There are also loops *w*, of sheet metal, to guide the outer parts of the sole-clamps.

When placing the skate upon the foot, the heel is between the spurs *l* and roller *q*, with the lever O in the position shown by dotted lines in Fig. 2, and the screw R is adjusted until the sole-clamps come up to the edges of the boot or shoe sole, after which the lever is pressed back into the position shown in Fig. 2 in full lines, and the clamps grasp the sole and heel firmly. It is to be understood that the slots in the sole-clamps being inclined, as shown, the pin *u* in them moves the sliding clamps inwardly as the pin is forced toward the toe of the skate by the action of the lever. The reverse movement liberates the parts and allows the roller-skate to be removed. The sole-clamps are close to and above the front pair of rollers, where they take a proper hold upon the sole of the boot or shoe. If a screw were introduced transversely at this place to operate the clamps, the rollers would have to be much smaller or the skate higher in order to give room for the screw above the rollers. By my improvement I am able to operate the clamps with the least amount of space between the foot-stock and the front rollers.

I claim as my invention—

1. The combination, with the front and back pairs of rollers, the axles, rocker-blocks, and stocks, of the connecting-rod N, the heel-plate L, and spurs *l*, the sole-plate extending back and fastened to the heel-plate, the lever O, screw R, slide, and sole-clamps *v v'*, substantially as set forth.

2. In combination with the front and back pairs of rollers and their axles and rocker-block, the stocks G, with studs *h*, riveted to the sole and heel plates, respectively, the transverse clamps occupying the space between the front stock, G, and the sole-plate, and mechanism, substantially as set forth, acting longitudinally of the roller-skate, to draw the clamp inwardly, substantially as set forth.

3. In combination with the pairs of rollers in a roller-skate, and the axles and rocker-blocks, the stocks G, riveted to the sole and heel plates, respectively, the lever O, roller *q*, and holdfast 5, and the heel-plate having spurs, substantially as set forth.

Signed by me this 26th day of April, A. D. 1883.

WM. J. MORRIS.

Witnesses:

M. B. DUNBAR,
J. F. CALHOUN.

(No Model.)

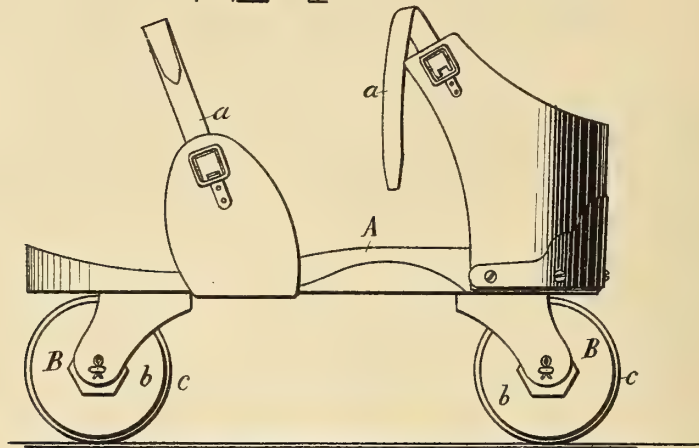
J. J. HENRY.

ROLLER SKATE.

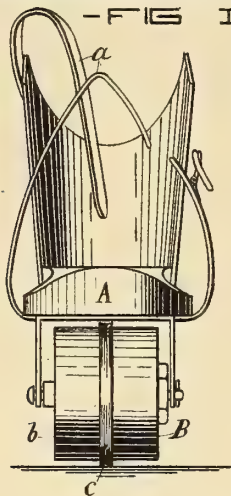
No. 284,009.

Patented Aug. 28, 1883.

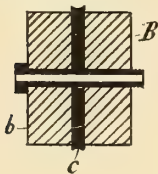
- FIG I -



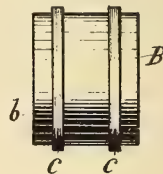
- FIG II -



- FIG III -



- FIG IV -



- WITNESSES -

David Fisher
Edw. J. Riggs

- INVENTOR -

John Joseph Henry
by G. W. Howard
Atty.

UNITED STATES PATENT OFFICE.

JOHN JOSEPH HENRY, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO GEORGE ALEXANDER SCHALL, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 284,009, dated August 28, 1883.

Application filed January 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN JOSEPH HENRY, of the city of Baltimore and State of Maryland, have invented certain Improvements in Roller-Skates, of which the following is a specification.

To fully understand the nature of my invention it must be borne in mind that many persons, especially children, learn to skate on floors of buildings and pavements with roller-skates, and while they may be proficient in this description of skating, they are totally unable to skate on ice with runner-skates, in view of the difficulty of maintaining an upright position.

The object of my invention is, therefore, the production of a skate which embodies the steadying properties of the roller type, and at the same time is provided with an edge to slightly cut the ice, and thereby prevent dangerous lateral movement, which would be experienced in the use of roller-skates having smooth rollers only. With this view I provide the rollers with one or more cutting-flanges, which project slightly beyond their peripheries, as hereinafter more fully described.

In the accompanying drawings, forming a part hereof, Figure I is a side view of my improved skate. Fig. II is a front view of the same. Fig. III is a longitudinal section of

one of the rollers. Fig. IV illustrates a modified construction of the roller.

Similar letters of reference indicate similar parts in all the views.

A is the body of the skate, having the usual straps, *a*, and B B are the rollers, held to the body in the usual manner. The rollers B consist of cylindrical blocks *b*, of wood, rubber, or other suitable material, in one or more parts, and a circular flange, *c*, of iron or steel, the edge of which projects beyond the circumference of the roller. The flange may be ground hollow, as shown in the drawings, or flat, as may be desired.

In Fig. IV the roller is shown as provided with two flanges; but I do not limit myself to any number. It will be understood that the flange or flanges cut into the ice to some extent and prevent lateral movement of the skate, while the body of the roller assists the wearer in maintaining an erect position.

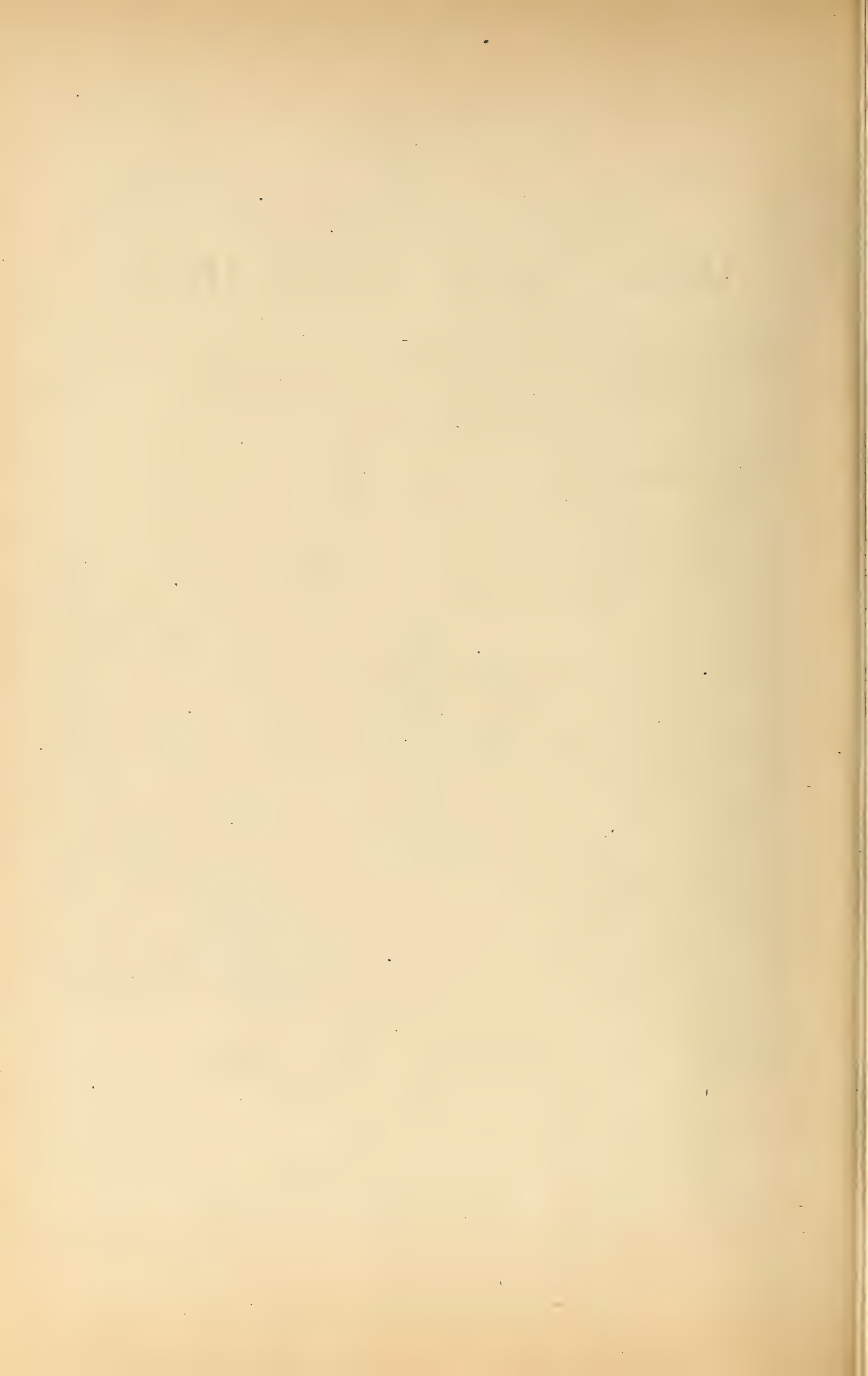
I claim as my invention—

In a roller-skate, the rollers thereof provided with one or more metallic flanges projecting beyond their circumference, substantially as and for the purpose specified.

JOHN JOSEPH HENRY.

Witnesses:

EDWARD J. DIGGS,
WM. T. HOWARD.



(No Model.)

R. H. COOMBS.

ROLLER SKATE.

No. 284,187.

Patented Sept. 4, 1883.

Fig. 1.

Fig. 3.

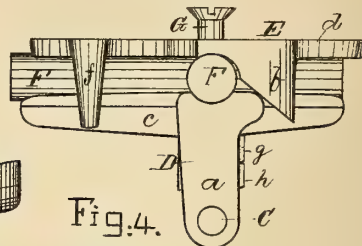
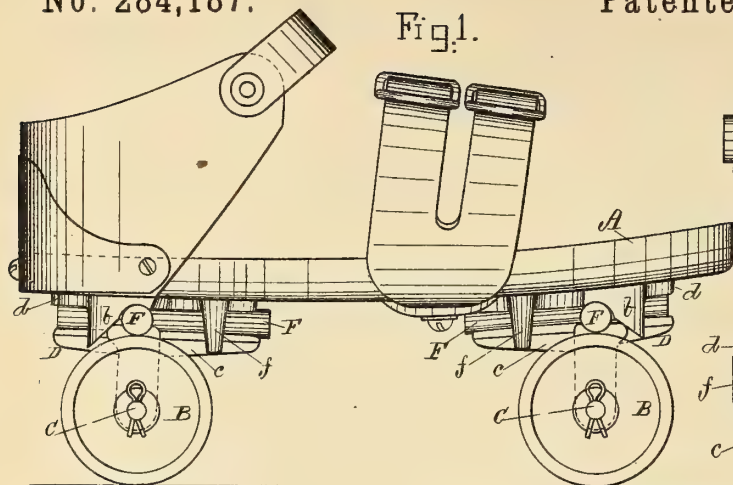


Fig. 4.

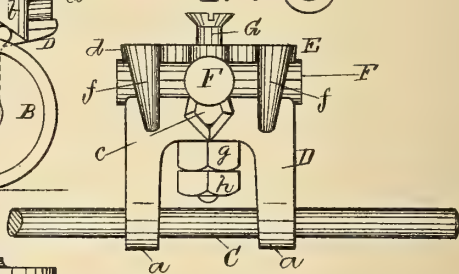


Fig. 2.

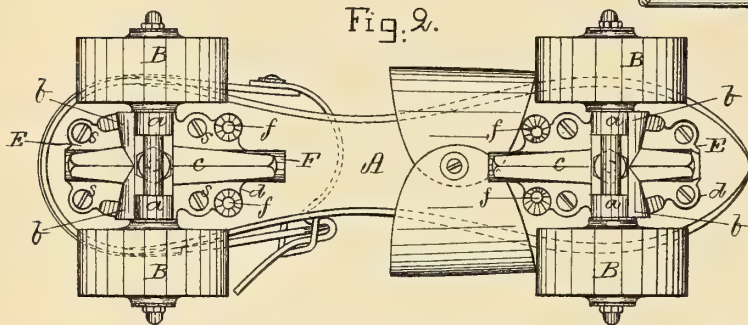


Fig. 6.

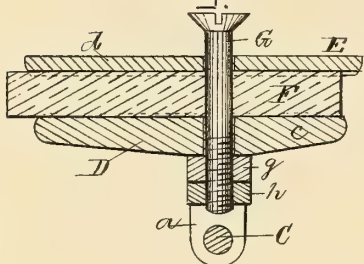


Fig. 5.

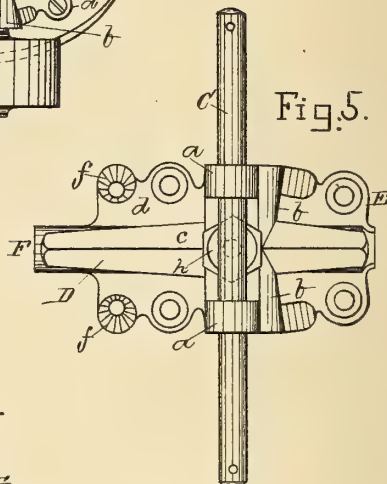
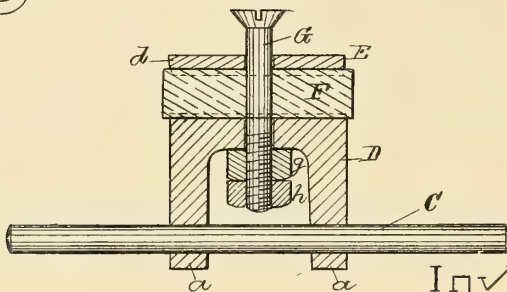


Fig. 7.



Witnesses.

S. N. Piper

E. B. Pratt

Inventor

Robert Hudson Coombs.

by R. W. Eddy atty.

UNITED STATES PATENT OFFICE.

ROBERT HUDSON COOMBS, OF BELFAST, MAINE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 284,187, dated September 4, 1883.

Application filed June 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT HUDSON COOMBS, of Belfast, in the county of Waldo, of the State of Maine, have invented a new and useful Improvement in Roller-Skates, and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, and Fig. 2 an under side view, of a skate provided with roller-spindle supporters of my improved kind. Fig. 3 is a side view, Fig. 4 an end view, Fig. 5 a bottom view, Fig. 6 a longitudinal section, and Fig. 7 a transverse section, of one of the said roller-spindle supporters, the nature of which is hereinafter defined.

This roller-spindle supporter contains not only a crucial elastic cushion interposed between its two sections, but has such sections provided with mechanism by which a skater, when skating with the skate, can cause the wheel-spindles of it to incline more or less to each other, in a manner to induce their wheels to run in a circular or curved path rather than in a straight one, as they will when the two spindles are parallel.

The foot-support piece is shown at A as provided with two pairs of wheels or rollers, B B, each pair being adapted to revolve freely on one of two spindles, C, each of which extends through and fastened firmly in two lugs, *a a*, projecting downward from the shorter arms of a cross, *c*, constituting with such lugs the lower section, D, of the spindle-supporter, the upper section of such supporter being shown at E.

The section E is secured to the lower side of a foot-support piece, A, by means of screws *s*, going through the said section and screwed into the said piece A. Such section E has extended down from its plate *d*, as shown, two inclined planes, *b b*, whose inclined faces are in contact with the shorter arms of the cross. There also projects downward from the platen two stops, *f f*, between which the longer arm of the cross *c* is arranged. These stops are to limit the lateral movement of the cross.

Between the two sections D and E is the crucial or cruciformed elastic cushion F, the body of each arm of which is cylindrical in shape. The two sections D and E are con-

nected by a pivotal screw, G, (which goes down through them and the cushion F,) and two nuts, *g h*, screwed on such screw underneath the cross *c*, as represented.

From the above and the drawings it will be seen that the spindle-supporters of the two pairs of wheels are alike in construction, and that the inclined planes of each incline in a direction opposite to those of the other. This being the case, when a skater with all the rollers of his skate resting on the floor desires to cause the skate to move in a curved or circular path he should incline his foot laterally inward, so as to move downward the inner inclined planes of the two spindle-supporters, and in like degree upward the outer inclined planes of such supporters. In so doing the lower section of each of such supporters will, by the inclined planes of the upper section, be revolved or turned on its pivotal screw, whereby the two spindles will be thrown out of parallelism and made to incline toward each other, so as to cause the wheels to run in a curved path.

The crucial elastic or vulcanized india-rubber cushion constitutes for each lower section, D, a bearing that will yield and allow the section to tip a little both lengthwise and widthwise, and to play up and down on the pivotal screw, thereby preserving the foot from the jars that it would experience in skating were there no cushion between the sections.

In practice I have found a skate having roller-spindle supporters, as described, to operate with great ease and advantage, and enable a skater to easily skate in curved as well as in straight paths, as he may desire.

I claim—

The roller-skate spindle-supporter, substantially as described, consisting not only of the section E, with its inclined planes, and the crucial sections, D, but of the crucial elastic cushion or bearing F, arranged between the said two sections, the whole being connected by a pivotal screw and one or more nuts, and arranged and adapted to operate essentially as set forth.

ROBERT HUDSON COOMBS.

Witnesses:

J. S. HARRIMAN,
CARRIE P. SANBORN.

May 24/62

J. Loratt,
Skate,
No. 3,186. *Reissued Nov. 10, 1868*

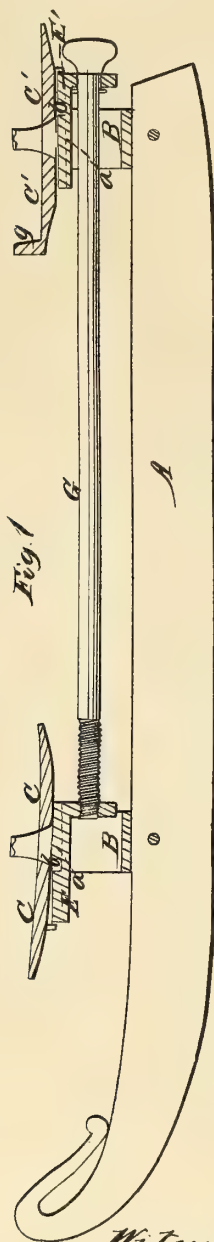


Fig. 1



Fig. 2

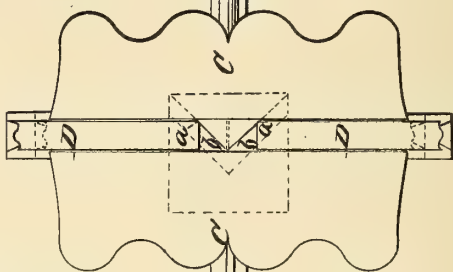
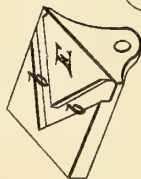


Fig. 3.



Witnesses
Charles L. Latham
John L. Latham

Inventor.
J. Loratt

United States Patent Office.

JOHN LOVATT, OF NEWARK, NEW JERSEY.

Letters-Patent No. 28,495, dated May 29, 1860; reissue No. 3,186, dated November 10, 1868.

IMPROVEMENT IN SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, JOHN LOVATT, of Newark, in the county of Essex, and State of New Jersey, have invented a new and useful Improvement in Clamping Skates to Boots or Shoes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section, taken through the heel and sole-plates; showing the screw-rod and movable pieces for adjusting the clamps to the sole of the boot.

Figure 2 is a top view of the skate, showing the four clamps and the movable slotted blocks in two positions.

Figure 3 is a perspective view of one of the slotted blocks detached from the foot-stand of the skate.

Similar letters of reference indicate corresponding parts in the three figures.

To enable those skilled in the art to fully understand my invention, I will proceed to describe its construction and operation.

In the drawings, A represents the runner or skate-iron, of any suitable shape, to which are secured, by rivets or screws, two standards, B B, which support the heel and sole-plates C C, and to which the heel and sole-plates are secured. These plates are of a sufficient length and width to give a firm and steady bearing for the feet.

D D D' are the clamp-bars, which have their edges bevelled down, so that they will fit in suitable slots made to receive them in the plates C C'. Their ends are turned up, and slightly over, and made sharp, so that they will serve as jaws, which will sink into the edges of the leather sole and heel, and gripe it firmly. The inner ends of these clamping-jaws have pins, *a a*, shown in dotted lines, fig. 1, projecting down into slots *b*, in blocks E E, fig. 3.

These blocks are placed under the sole and heel-plates C C, and in the middle of the same, and are suitably held to these plates between guides, which only allow them to have a longitudinal movement. The grooves *b* are cut into the faces of blocks E E' in a wedge or v-shape, the angles of which are contrary to each other in arrangement in their bearings, so that a

rod, G, having a screw-thread cut on its front end, and tapped through a projecting lip of the block E, and passing loosely through a similar projecting lip on block E', can be made, by screwing it up so as to move the blocks toward each other, to contract the jaws.

The screw-rod G extends longitudinally over the skate-iron, works loosely in the lip of the heel block E', and is tapped with a screw-thread through the lip of block E, as above described. It has a thumb-piece on its rear end, which is entirely out of the way in skating, but is very conveniently operated to tighten or loosen the clamps.

It will be seen by this description that the power obtained by the v-shaped slots, acting on the clamping-jaws, is very great, being a combination of screw and wedge, and the clamps are drawn laterally, to gripe firmly and securely the sole and heel of a boot or shoe by the operation of the screw G, rendering no other fastening necessary.

The lug or shoulder *q*, projecting up from the front of the plate, is to prevent the boot from slipping forward, and may be placed either upon the heel-plate, as shown, or upon the front of the sole-plate, when the plate is made the full length.

The pin *h*, on rod G, is turned backwards to loosen the skate from the boot.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The adjustable hooked clamps D D', or their equivalents, for fastening skates, arranged to be tightened and adjusted by means of an adjusting-screw.

2. Constructing a skate, having a supporting-plate, with a projecting piece or lug, to prevent the boot from slipping forward, and clamp-fastenings, adjusted by means of an adjusting-screw.

3. The combination of the movable slotted blocks E E', or their equivalents, with clamps D D', and the adjustable screw G, arranged substantially as described, and for the purposes specified.

JOHN LOVATT.

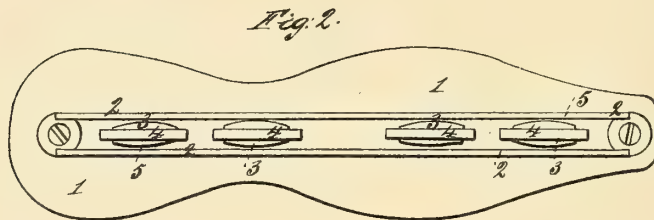
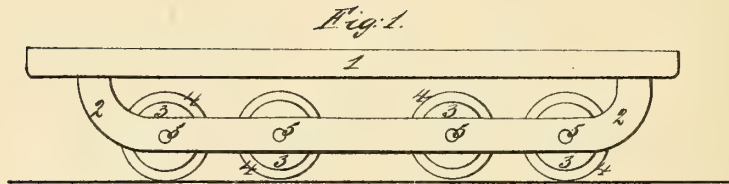
Witnesses:

CHARLES DAWSON,
CORNELIUS DAILY.

R. Shaler,
Parlor Skate.

N^o 28,509.

Patented May 29, 1860.



Witnesses:

J. M. Dudley
H. L. Shaler

Inventor:

Ruben Shaler

R. Shaler,
Parlor Skate,
No. 1,639, Reissued Mar. 15, 1864.
Fig. 7.

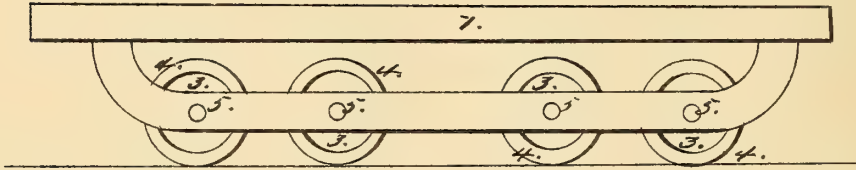


Fig. 2.

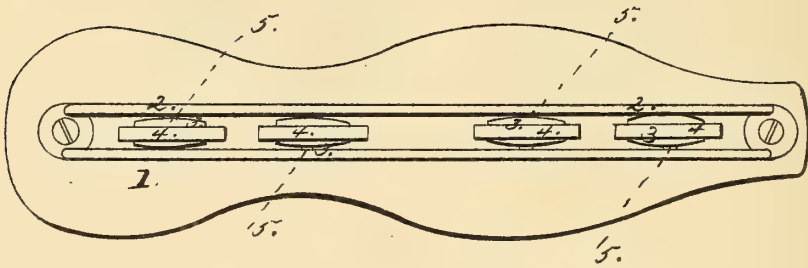


Fig. 3.



Witnesses:
Joseph Hewatt.
W. L. Bennett.

Inventor:
R. Shaler.
by his attorney
C. S. Kenwick.

(No Model.)

M. F. EVANS.

ROLLER SKATE.

No. 285,599.

Patented Sept. 25, 1883.

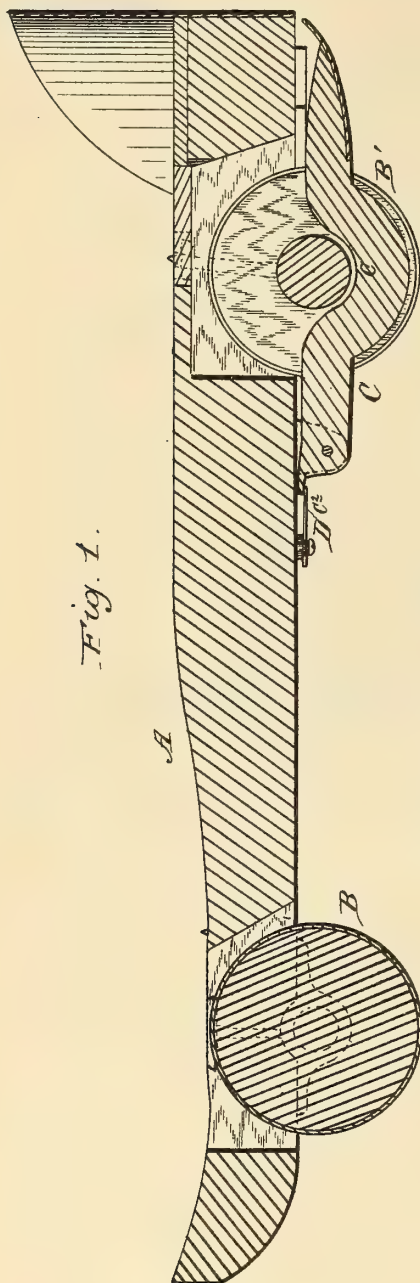


Fig. 1.

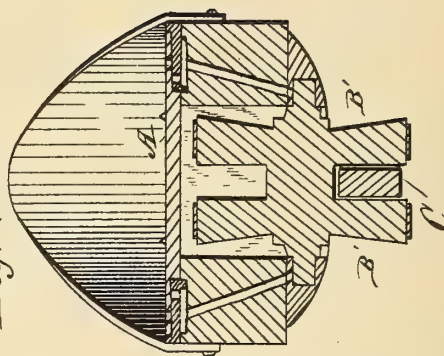


Fig. 2.

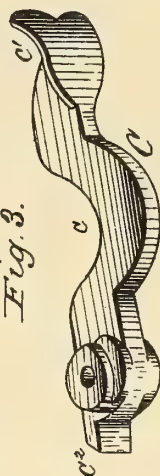


Fig. 3.

WITNESSES

Edw. Johnson
L. C. Hills.

Inventor:

M. F. Evans.

[Signature]

Attorney

UNITED STATES PATENT OFFICE.

MATTHIAS F. EVANS, OF NEVADA, MISSOURI.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 285,599, dated September 25, 1883.

Application filed June 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS F. EVANS, a citizen of the United States of America, residing at Nevada, in the county of Vernon and State of Missouri, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in roller or parlor skates, its object being to provide a roller or parlor skate with a brake of such construction that it will come into operation when the toe of the skate is raised, and will not impede its movement when the toe is not raised, the pressure from said brake being applied gradually to the journals of the heel-rollers, so as to prevent the shock resulting from the application of a perfectly rigid brake.

In the annexed drawings, which illustrate my invention, Figure 1 is a longitudinal section. Fig. 2 is a perspective view of the brake detached, and Fig. 3 is a transverse section.

Referring to the accompanying drawings, A represents the foot-plate, and B B', respectively, the front and rear or toe and heel rollers, which are secured to the foot-plate in suitable journals. These rollers are provided on their periphery with leather, rubber, or other suitable flexible material. If desirable, at the toe I may use double rollers or a single roller, said rollers being supported upon the same shaft. At the heel I use double rollers B' B', which are secured rigidly upon a transverse shaft and are separated from each other.

In the foot-plate A, immediately above the journals in which the shaft which carries the rollers rotates, I provide suitable lubricators or perforations, which extend to the upper part of the foot-plate. Immediately above these openings the foot-plate is recessed for the reception of a slide, which has upwardly-projecting outer ends and side extensions on its inner end. This recess above the slide is provided with a cover with downwardly-project-

ing legs and a perforation. The cover is securely attached to the foot-plate, and the legs serve to hold the same above the slide, so that said slide may be moved backward and forward within the recess.

When it is desirable to lubricate the journals, the slide may be pushed outwardly, which will provide a continuous perforation from the foot-plate of the skate to the journals, and when said slide is pushed inwardly it will be closed and dirt prevented getting access to said journals. The straps at the rear portion of the skate are connected to a bail or other means of attachment, which is pivoted to the sides of the foot-plate, so that said straps will lie flat upon the foot of the wearer, and may be adjusted at different angles.

The journals in which the transverse shaft of the rollers operates may be formed integral with the foot-plate, or may be attached thereto, as desired, the latter method being the preferred construction when a wooden foot-rest is employed.

The shaft to which the rear rollers are attached is enlarged at a point between said rear rollers, so as to provide a larger bearing-surface for the brake.

The brake, which is attached pivotally to the under portion of the foot-plate in front of the rear rollers, consists of a single casting, which is provided at approximately its central portion with an inner curve, *c*, and it is curved on its outer end, and provided with a portion which extends sidewise beyond the width of the casting, as shown at *c'*. This brake C is also provided forward of the portion to which it is pivoted to the foot-plate with a projection, *c''*. The brake is pivoted between suitable downwardly-projecting brackets or hangers, which are rigidly attached to the foot-plate, and through which passes a pintle for the connection of the parts.

To the under side of the foot-plate A, immediately in front of the brake C, is secured a suitable spring, D, which bears upon the projection *c''*, formed upon the brake. This spring serves to hold the brake away from the roller-shaft, under which the brake passes. The outer curve of the brake, at its central portion, where it bears upon the shaft, is of such size that it will not project beyond the rollers, and

this downward movement of the brake is prevented by the end projection, c^2 , which will bear against the under parts of the foot-plate.

The operation of my invention, as far as it relates to the brake, is substantially as follows: When the skate is kept level upon the floor, the brake will be inoperative. Thus a skater may propel himself either forwardly or backwardly, as he may desire, and the brake will not impede his progress, and immediately the toe is raised from the floor the end c' of the brake C will come in contact therewith, and the curved portion will bear upon the shaft which connects the rollers, thereby stopping their rotating, and this stoppage or rotation is graduated, owing to the curved end, which, from its shape, gradually increases the pressure upon the shaft of the rollers as the toe of the skate is raised.

It will be noticed that in my invention there are no forward-projecting hooks, which are objectionable, owing to their liability to gather and hold any obstructions which may be upon the floor, and the brake, when not in use, is raised considerably above the rollers, and that the forward-projecting portion of the brake will prevent the same from dragging upon the floor.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller or parlor skate, the rear rollers provided with an enlarged central shaft, in combination with a brake pivoted to the foot-plate forward of the rollers, and extending between the same over a shaft, and provided with a rear upwardly-curved end, for the purpose set forth. 35

2. In combination with a roller-skate having rear rollers, B' B', secured to each other by a transverse shaft, the brake C, pivoted in front of said rollers, and provided with a central curved portion and an upwardly-curved rear end, and a forwardly-projecting portion in front of the pivot of the brake, and the spring D, the parts being organized substantially as shown, and for the purpose set forth. 40 45

3. The foot-plate A, provided with a perforation above the roller-journals, and slide secured above said perforation by means of a plate with a central opening, and downwardly-projecting legs for holding the slide against displacement, substantially as described. 50

In testimony whereof I affix my signature in presence of two witnesses.

MATTHIAS F. EVANS.

Witnesses:

JOHN T. BIRDSEYE,
THOMAS W. MAXEY.

(No Model.)

E. F. BALLOU.
ROLLER FOR SKATES.

No. 285,783.

Patented Oct. 2, 1883.

Fig. 1.

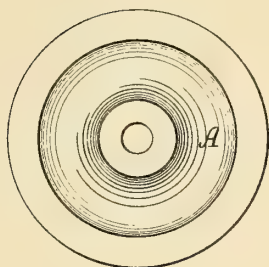


Fig. 2.

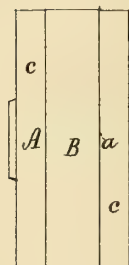


Fig. 4.

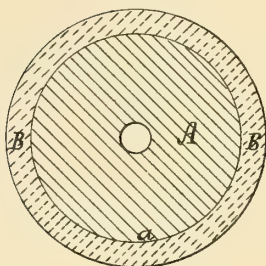
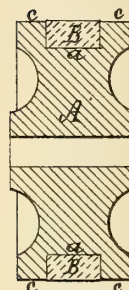


Fig. 3.



Witnesses.

S. N. Piper
E. C. Pratt.

Inventor

Edward Francis Ballou.

by R. H. Ledy att'y

UNITED STATES PATENT OFFICE.

EDWARD F. BALLOU, OF MARLBOROUGH, MASSACHUSETTS.

ROLLER FOR SKATES.

SPECIFICATION forming part of Letters Patent No. 285,783, dated October 2, 1883.

Application filed July 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD FRANCIS BALLOU, of Marlborough, in the county of Middlesex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Rollers for Skates; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

10 Figure 1 is a side view; Fig. 2, an edge elevation; Fig. 3, a transverse, and Fig. 4 a longitudinal, section of a skate-roller of my improved kind.

The improved roller has a groove formed within it at and around its periphery, which groove may be rectangular, square, or trapezoidal in shape in its transverse section. The groove has a filling of cork fastened within it, its outer surface being even, or about so, with the bearing-surface or tread of the roller.

In the drawings, A denotes a skate-roller of the usual form, made of lignum-vitæ or other proper wood, it being grooved in its periphery, as shown at *a*, and the groove filled with a strip or mass, B, of cork, the outer surface of which is flush with or slightly projecting from that of the tread or cylindrical bearing, parts *c c* of the roller.

It is found in practice that a skate-roller so constructed is preferable to one without cork in it, as it makes very much less noise in re-

volving on a floor, wears it less, and can be revolved to better advantage. Besides, it is not so liable to slip laterally, and thereby cause a skater to fall down while suddenly turning about in skating.

I am aware that bicycle-wheels usually have elastic tires of rubber, and that carriage-wheels have had elastic tires extending across their periphery, and therefore I make no claim to such. Nor do I claim in roller-skates rubber springs or any other device adapted as shown or described in the United States Patent No. 243,761, or in that entitled Reissue No. 7,345. In my skate-roller the cork does not extend entirely across the periphery, but only partially across it, such cork being flanked by or depressed between bearing-surfaces of such periphery, which prevent it while in use from being contracted so as to be injured or broken.

I therefore claim as a new or improved manufacture—

A skate-roller grooved peripherically and having cork arranged in the groove, and flanked by bearing-surfaces or parts of the periphery, substantially as set forth.

EDWARD FRANCIS BALLOU.

Witnesses:

GEO. BALCOM,
JOHN L. STONE.

(No Model.)

E. W. OTIS.
SKATE ROLLER.

No. 285,836.

Patented Oct. 2, 1883.

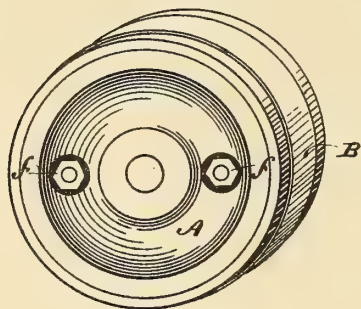


Fig. 1.

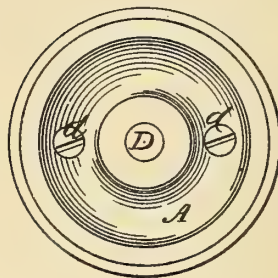


Fig. 2.

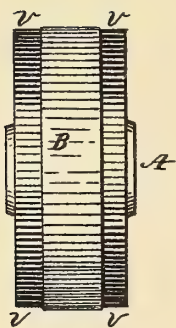


Fig. 3.

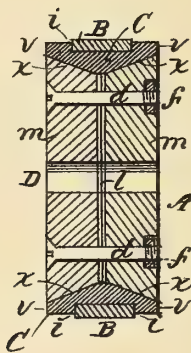


Fig. 4.

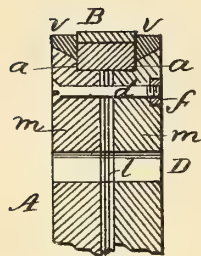


Fig. 5.

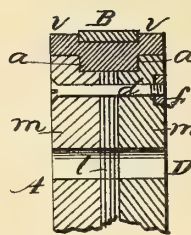


Fig. 6.

Witnesses:

A. Fawcett
L. J. White.

Inventor:

Elisha W. Otis.
Per C. C. Shaw
Atty.

UNITED STATES PATENT OFFICE.

ELISHA W. OTIS, OF CHELSEA, MASSACHUSETTS.

SKATE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 285,836, dated October 2, 1883.

Application filed July 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELISHA W. OTIS, of Chelsea, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Skate-Rollers, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view of my improved roller; Fig. 2, a side elevation of the same; Fig. 3, an edge view; Fig. 4, a vertical transverse section; and Figs. 5 and 6, sectional views, showing modifications of the improvement.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of rollers which are employed in the manufacture of roller or parlor skates; and it consists in a novel construction and arrangement of parts, as hereinafter more fully set forth and claimed, by which a more effective article of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation, its extreme simplicity rendering an elaborate description unnecessary.

In the drawings, A represents the body of the roller, B the tire, and C the cushion.

The body is preferably composed of wood, and is constructed in two corresponding sections or halves, *m m*, which have their peripheries inwardly beveled or chamfered, as shown at *x x*, and are connected by the transversely-arranged bolts *d* and nuts *f*.

Fitted into the groove formed by the bevels *x* around the body of the roller there is a band or cushion, C, composed of elastic rubber, and provided on its face with the annular groove *i* for receiving the tire B.

The tire is flat, and may be composed of iron, steel, brass, or any other suitable material, being slightly thicker than the depth of the groove *i*, in which it rests, and preferably about two-thirds as wide as the cushion C, the

face of which, at all points, is in the axial line of the roller.

In constructing the roller the tire B is first inserted in the groove *i* of the cushion C, after which the sections *m m*, forming the body A, are placed on the opposite sides of the cushion, with their beveled edges inward, and secured by means of the bolts and nuts *d f*, in a manner which will be readily obvious without a more explicit description. The inner faces of the sections *m* are removed, or the sections constructed of such a thickness that a space, *l*, is left between them to enable a strain to be obtained on the tire by forcing the cushion C outwardly as the nuts are turned in, the beveled edges *x* acting against the corresponding inclines or bevels on the under side of the cushion to press the same diagonally against the under side of the tire, and also to elevate the extreme outer edges, *v*, of the cushion, thereby tightening the tire, and also furnishing a firm bearing for the edges and compensating for their wear. The roller is provided with a hole, D, for receiving an ordinary axle-pin, and is designed to bear on the tire B; but in turning, and also in performing fancy skating, when the body of the roller is inclined, the edges *v* are brought to bear, and the skater thereby prevented from slipping.

It will be obvious that the rubber cushion will act as a spring to receive and absorb the jar caused by the roller passing over any inequalities in the floor; also, that when the edges become badly worn a new cushion may be readily substituted.

I do not confine myself to the use of the bolts and nuts for securing the sections of the body, as other means may be employed for that purpose; neither do I confine myself to the special form of the cushion C or the bevels *x*, as these may be varied considerably without departing from the spirit of my invention.

In Fig. 5 the edges *v* are constructed independent of the body of the cushion C, the cushion being let into a rabbet or socket, *a*, formed in the sections *m*.

In Fig. 6 the body and edges of the cushion are integral, or formed in one piece, but the outer edges of the sections *m* are straight, or in parallelism with the face of the tire B, and a rabbet or socket, *a*, is formed in the sections

to receive the body of the cushion; but as I propose to make the modifications of my improvement, as shown in Figs. 5 and 6, the subject-matter of other Letters Patent I do not claim the same specifically in this application.

Having thus explained my invention, what I claim is—

1. The improved skate-roller herein described, the same consisting of the body A, cushion C, tire B, bolts *d*, and nuts *f*, constructed, combined, and arranged to operate substantially as set forth.

2. A skate-roller having a body provided with an annular elastic cushion around its periphery, and a tire of less width than the cushion disposed around the same, in combination with means for forcing the cushion outwardly against the tire and supporting the projecting edges of the cushion, substantially as specified.

3. In a skate-roller substantially such as described, an annular elastic cushion disposed around the body of the roller, and provided with a groove for receiving the tire, substantially as set forth.

4. In a skate-roller substantially such as described, the body A, composed of the two sections *m m*, having the beveled edges *x* for receiving the tire and cushion, and provided with nuts and bolts or means for forcing the sections inwardly to expand the cushion and tighten the tire, substantially as set forth.

ELISHA W. OTIS.

Witnesses:

C. A. SHAW,
L. J. WHITE.

(No Model.)

O. ARNOLD.

ROLLER SKATE.

No. 287,607.

Patented Oct. 30, 1883.

Fig. 1.

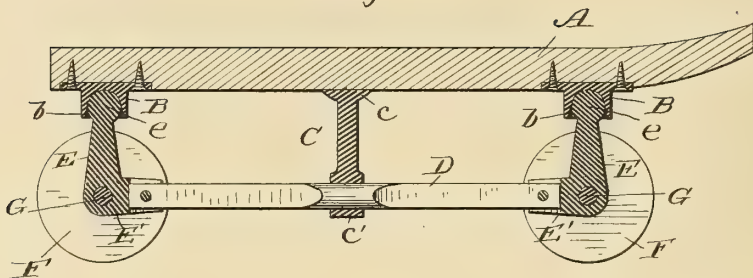


Fig. 2.

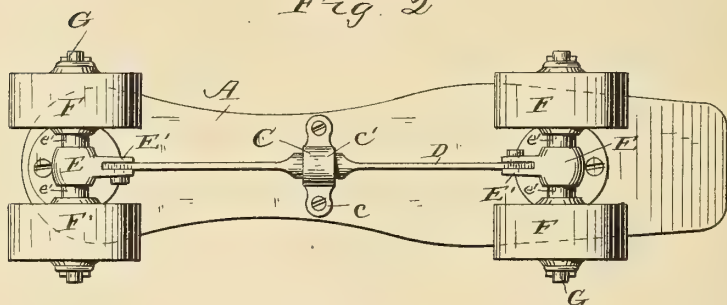
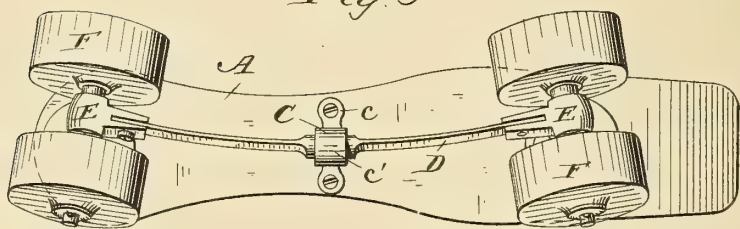


Fig. 3.



Witnesses:

H. N. Low
Robert Everett.

Inventor:

Oliver Arnold
by Henry J. Seligman
att'y.

UNITED STATES PATENT OFFICE.

OLIVER ARNOLD, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO JOHN L. TRUAX, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 287,607, dated October 30, 1883.

Application filed March 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, OLIVER ARNOLD, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The object of my invention is to produce a roller-skate which is very simple in construction, efficient in operation, and strong and durable, my construction permitting the skater to control the motion of the trucks in making curves with great ease by simply inclining the body, and thus throwing the weight on one side or the other of the tread or stock with which the trucks or roller frames are connected.

In the accompanying drawings, in which like letters indicate corresponding parts in the several figures, Figure 1 is a longitudinal sectional view of my improved skate. Fig. 2 is a reverse plan view of the same with the trucks in their natural positions. Fig. 3 is a view similar to Fig. 2, but showing the trucks and spring-bar in the positions which they will occupy when the skater is describing a curve.

A indicates the stock or tread, to which are secured, by screws or otherwise, the bearing-plates B, provided with concave sockets *b*. A guide-arm or support, C, is also firmly secured to the stock or tread A, near the center thereof. Said guide-arm or support may consist of a straight bar having a flanged portion, *c*, at its upper end, through which the screws securing it to the stock A are passed, and at its lower end an eye, *c'*, in which a spring rod or bar, D, is supported; or, instead of the construction just described, the guide-arm may be forked or U form in shape, the spring rod or bar D being sustained in the lower portion thereof.

The roller frames or trucks consist of right-angular brackets E, the upper ends of their vertical portions being rounded to form ball-bearings *e*, adapted to the sockets *b* in the bearing-plates B. The horizontal portions *E'* of the brackets E are secured to a spring rod or

bar, D, sustained by the guide-arm C, said spring rod or bar thus serving to connect the brackets E firmly together and to hold the same in their bearings in the plates B. The rollers F of the trucks are mounted on axles or pins G, passing through the brackets E, said rollers being secured on said axles or pins in any suitable manner, the brackets E being provided with lateral extensions *e'*, to afford a wide bearing for the axles G.

From the foregoing description it will be evident that the trucks or roller frames are held in their straightforward or normal positions by the spring bar or rod D, and that they are held to their bearings in the plates B by this same spring bar or rod. It will also be apparent that the ball-and-socket or universal-joint connections of the trucks with the stock or tread will permit said trucks to move in any desired direction relative to the said stock, to accommodate the movements of the skater. Thus, as the skater inclines his body to one side, throwing his weight on the side of the stock or tread, the latter will be slightly inclined, causing the trucks to assume the position indicated by Fig. 3, when the skater will move in a curve, the spring-bar D bending, as indicated by said figure, to permit of the inclined movement of the trucks. As soon, however, as the skater assumes a vertical position with his weight central on the stock of the skate, the resiliency of the spring-bar will cause the trucks to assume the position indicated by Fig. 2, and the skater will again move straight forward.

I am aware that prior to my invention roller-skates have been made in which the trucks were constructed to turn in different directions by inclining the stock or tread sidewise.

I am also aware that it is not broadly new to join the trucks or roller frames together by a spring-bar, or to connect the trucks or roller-frames with the stock or tread by a ball-and-socket joint, and hence I do not broadly claim any of these constructions; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the stock or tread A, of the bearing-plates B, secured to said stock or tread, and having concave sockets *b*, the

right-angular brackets E, having ball-bearings
e, adapted to said sockets, and means for elas-
tically connecting said right-angular brackets
and for holding the same in their bearings,
5 substantially as set forth.

2. The combination, with the stock or tread
A, the bearing-plates B, having concave sock-
ets, the right angular brackets E, having ball-
bearings adapted to said sockets, the spring-

bar D, serving to elastically connect said brack- 10
ets E and hold the same in their bearings, and
the guide C, attached to said stock or tread,
and serving to sustain said spring-bar, sub-
stantially as described.

OLIVER ARNOLD.

Witnesses:

EDMUND B. BABCOCK,
JOSEPH O'MARA.

(No Model.)

2. Sheets—Sheet 1.

J. S. GALLAHER.

ROLLER SKATE.

No. 287,820.

Patented Nov. 6, 1883.

Fig. 1.

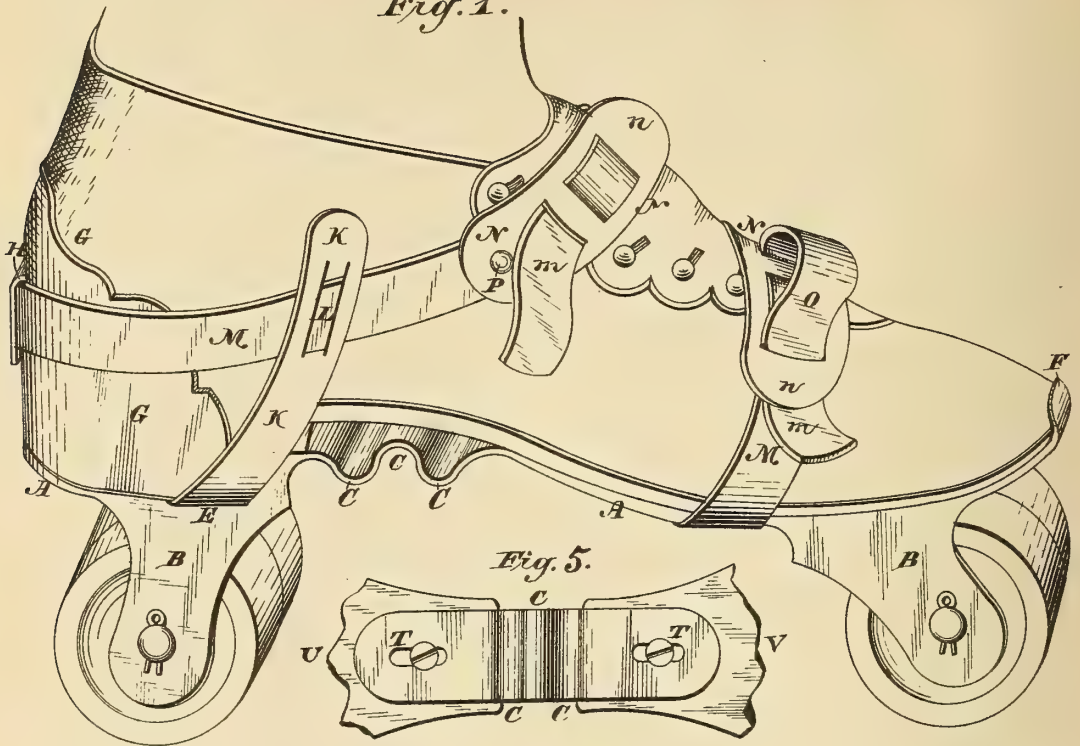


Fig. 5.

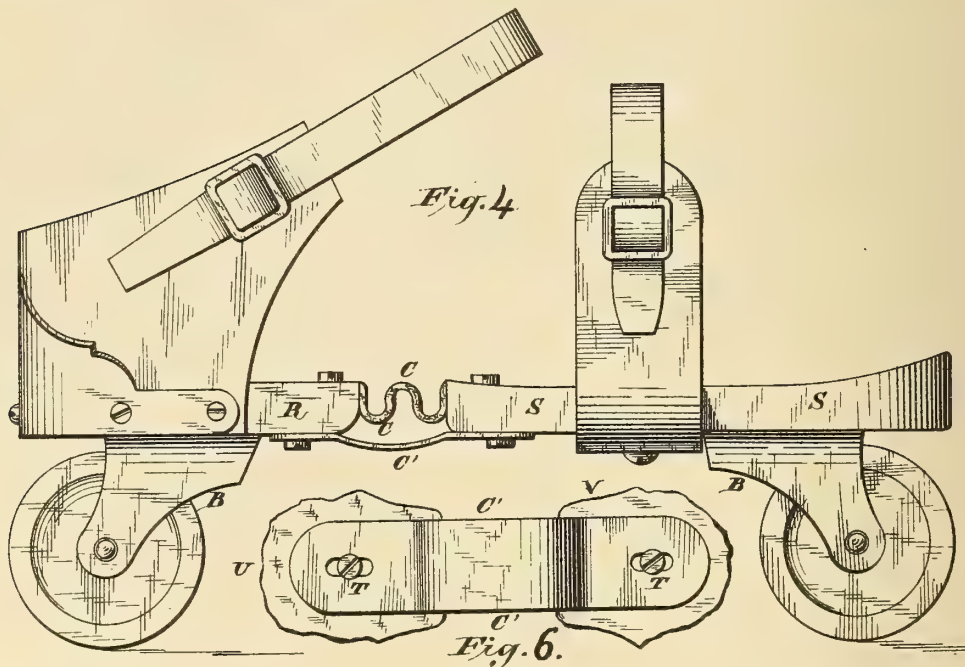


Fig. 6.

Arrest
Bill all other
Edward E. Stow

Inventor.

John S. Gallaker.

(No Model.)

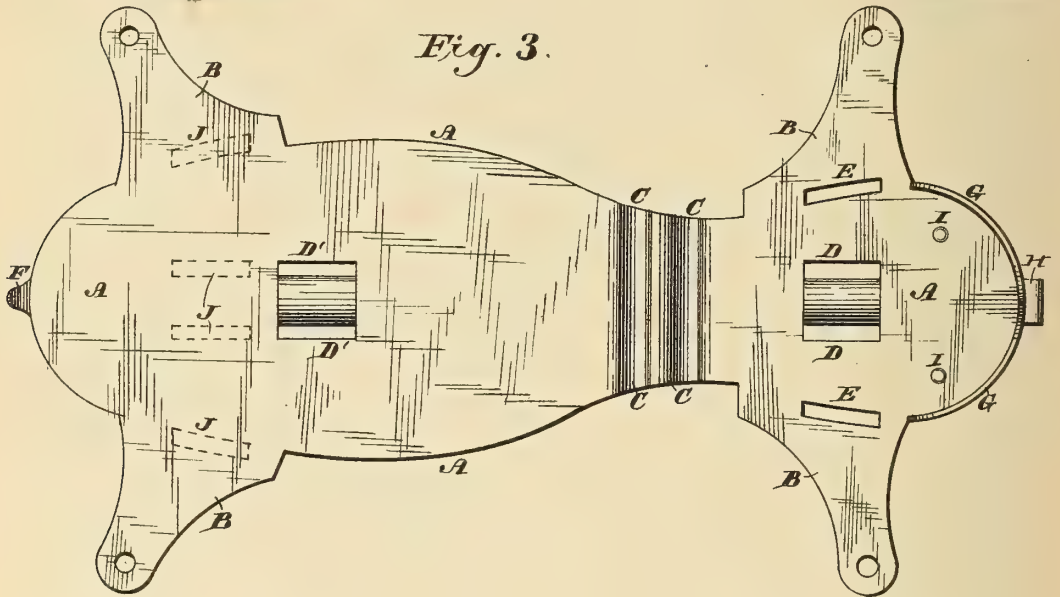
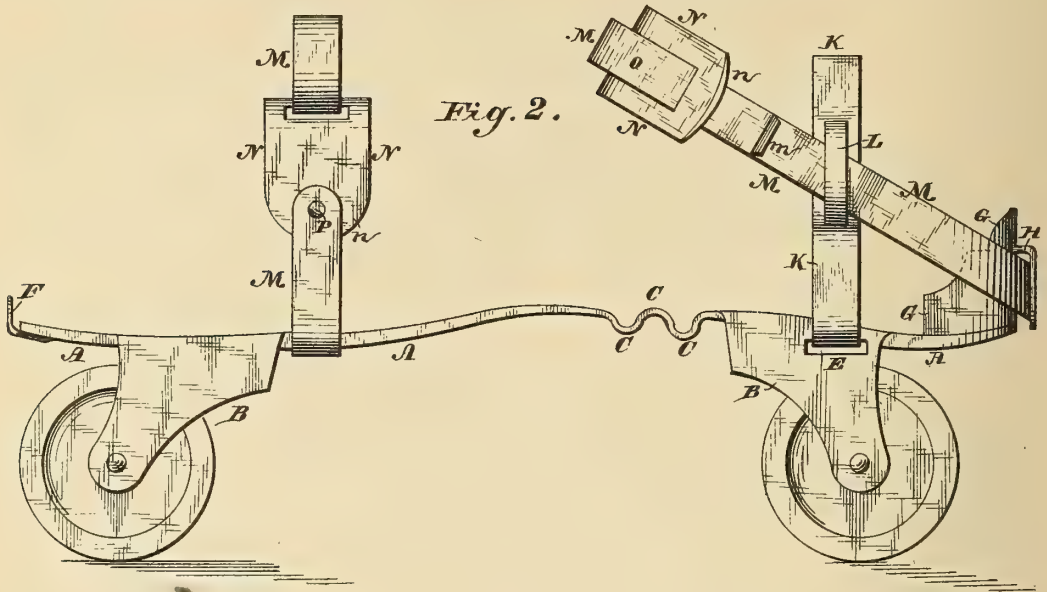
2 Sheets—Sheet 2.

J. S. GALLAHER.

ROLLER SKATE.

No. 287,820.

Patented Nov. 6, 1883.



Attest.
J. S. Gallaher
Edmund Stier.

Inventor.
John S. Gallaher.

UNITED STATES PATENT OFFICE.

JOHN S. GALLAHER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
TO HIMSELF AND MARY CATHARINE MILLAR, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 287,820, dated November 6, 1883.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. GALLAHER, a native citizen of the United States, residing at the city of Washington, in the District of Columbia, have invented and made certain new and useful Improvements in Roller or Parlor Skates, of which the following is a specification.

My improvements relate to and embrace certain special new features of simplicity of manufacture, with ready and easy adaptation to the use and purposes for which they are intended.

Figure 1 is a side view, showing in part the form of construction and the manner or mode of applying and using the improvements. Fig. 2 is a side or edge view in part of a pedal-plate or foot-rest, together with the rollers and parts of fastening-straps. Fig. 3 is a top or flat view of the individual pedal-plate or foot-rest. Fig. 4 is a vertical side view, representing an ordinary wooden "roller or parlor skate" reconstructed, and having combined therewith a corrugated and a plain flat spring. Figs. 5 and 6 represent fragmental parts *u v* of an ordinary wooden foot-rest, showing how the different forms of springs are attached to the foot-rest, made in sections, the foregoing making a part of the following description.

The object of my improvements is to so simplify the construction and manufacture of pedal-plates or feet-rests in such a manner as to do away with the stiff, rigid, solid metal or wooden feet-rests or pedal-plates in common use, and to produce a flexible springing or yielding support for the feet, so that a tensible elastic-like function, affording ease of muscular movement, is brought about in the use thereof, thereby preventing strain, stiffness, and discomfort to the ankles and feet of the wearer, together with the further object of cheapness of construction, durability, with safety in use, as well as dispensing entirely with complicated and multifarious appliances, such as screws, adjusting-rods, clamps, pins, bolts, buckles, and clasps.

More fully in explanation of my improvements, in the manufacture thereof the pedal-plate or foot-rest A A, Fig. 3, can with proper stamps and dies be cut out of suitable thin

flexible sheet or plate metal struck up and formed in the desired shape, together with the slotted ears or perforated axle-bearings B B, the pedal-plate or foot-rest also shaped or formed with series or successions of neat corrugations, flutes, grooves, crimps, or ridges C C C, said formations, Fig. 3, arranged either directly, transversely, or obliquely right and left across the plate and not parallel longitudinally, particularly not to stiffen or render the foot-rest rigid, but the reverse, and by the succession of corrugations to produce an increased surface of flexibility, and to be more tensible and yielding.

The slots or cut-outs D D E E, the spur-like toe rest or stop F, and the heel guard or brace G, formed with the hasp or staple H, all being formed at the same time on the same plate of metal, or made separate and attached in any suitable manner, as shown at I I, Fig. 3, the pedal-plate A A may be made more symmetrical, avoiding undue thickness and weight, slightly and gradually thinner, curved or arched somewhat at the transverse corrugations. If found necessary, the slots or cut-outs may be changed in location, as indicated by the series of dots at J J J; and should it be preferred to have a cast-metal pedal-plate or foot-rest, suitable patterns may be made, and the corrugated or any other suitable form of springs can be arranged in the required matrix or mold, and the molten metal cast onto the spring or springs. The flexible pedal-plate A A may also be formed with one or more longitudinal parallel slits, slots, or cut-outs, forming several or a series of plain or corrugated flexible parts. This arrangement is, however, not delineated in the drawings.

In Fig. 4 is shown how my system or mode of corrugated and plain flat springs C C C' C' are applied to the ordinary thick wooden pedal or foot-rest by merely constructing the same in two separate sections or parts, R S S, and cutting out a slight depression or countersink on the top and under surfaces of the wooden sections, into which can be fitted the ends of the springs C C', formed with oblong compensating slots or cut-outs T T, said springs being held in place by suitable adjusting-screws, as shown in Figs. 4, 5, 6. By aid of said com-

pensating slots and screws the pedal-plate or foot-rest can be lengthened out or shortened, so as to fit and be adjustable to different sizes of feet, thus making an extension, compensating, and flexible yielding wooden pedal or foot-rest.

I am aware that metal forms, skate-frames, and feet-rests have been stamped or cut out of wrought metal, and formed with axle-bearings, longitudinal parallel rigid ribs or corrugations for stiffening or strengthening the thin metal plate, and that feet-rests for skate blades, runners, and rollers have been cast of metal and formed with axle-bearings, central openings, and side lugs, making a rigid, unyielding foot-rest; also, that skates have been made with extension-plates and adjusting thumb-screws. I am also aware of an expired patent of 1855, in which is shown a single somewhat compressed flat spring inverted, and a skate-blade or sliding runner, in combination with wooden sections of a foot-rest; also, another expired patent of 1866, in which is shown a single curved narrow "flexible tongue," a "toe-cap," and a "heel flange or support," in combination with pairs of metal skate blades and runners, and combined with pairs or groups of rollers. There is also a skate-heel "brace-plate" formed on its upper edge or rim with a turned-down lip-piece which presses down flat and flush against the heel or ankle strap fastening, holding it firmly and permanently, thereby preventing the strap-fastening from being readily detached or slipped out, and from being self-adjusting right and left, as designed and required by my open staple or hasp H, when desired. Such several enumerated devices, modes of adjustment, and combinations of single springs, blades, runners, or rollers as therein shown and described I do not use or claim in themselves; but,

Having clearly set forth, described, and shown in detail the nature, object, and general utility and marked difference in form of construction and combination of the several mechanical functions of my improvements, what I claim and consider as new and useful, and desire to secure by Letters Patent of the United States, is—

1. A roller, parlor, or other skate constructed with a pedal-plate or foot-rest, A A, stamped up or cut out or formed of wrought flexible metal, provided with lateral ears or axle-bearings B B, having slots or cut-outs D D D' D' E E for fastening-straps, formed also with a series or succession of flexible corrugations, grooves, flutes, ridges, or crimps, C C C', arranged transversely or in any position across the length of the pedal-plate or foot-rest, having also a toe rest or stop, F, a heel guard or brace, G G, formed with an open hasp or staple, H, all substantially as and for the purposes set forth, shown, and described.

2. In a pedal-plate or foot-rest for skates, the combination of cast sections with wrought metal springs, or formed of a series or a succession of corrugations, grooves, flutes, ridges, or crimps, C' C C, substantially as and for the purposes set forth and described.

3. In a roller or parlor skate, a wooden pedal-plate or foot-rest formed in one or more sections, combined with a series or succession of flexible corrugations, grooves, flutes, ridges, or crimps, C C, and a plain flat spring, C', said springs being both provided or formed with compensating oblong slots T T and adjusting-screws, substantially as set forth, shown, and described.

JOHN S. GALLAHER.

Witnesses:

B. FRANK GALLAHER,
Mrs. M. H. SENSENEY.

(No Model.)

G. F. RICE.

ROLL FOR ROLLER SKATES.

No. 287,861.

Patented Nov. 6, 1883.

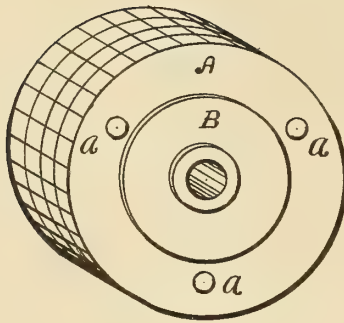


FIG. 1.

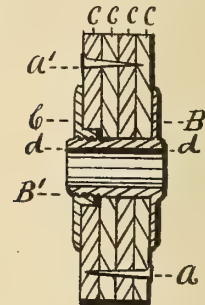


FIG. 2.

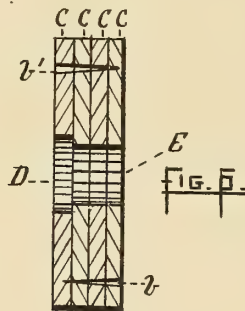


FIG. 3.

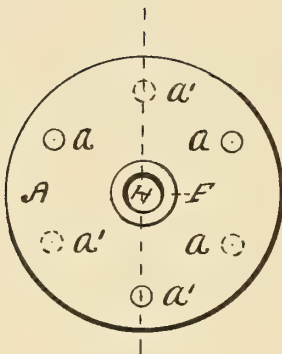


FIG. 4.

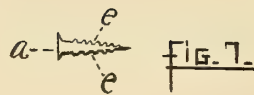


FIG. 5.

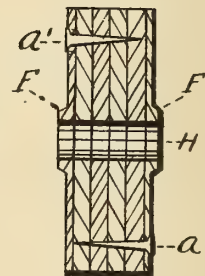


FIG. 6.

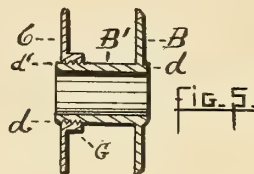


FIG. 7.

Witnesses.

R. B. Fowler.
H. M. Fowler

Inventor.

G. F. Rice

UNITED STATES PATENT OFFICE.

GEORGE F. RICE, OF WORCESTER, MASSACHUSETTS.

ROLL FOR ROLLER-SKATES.

SPECIFICATION forming part of Letters Patent No. 287,861, dated November 6, 1883.

Application filed December 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. RICE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Rolls for Roller-Skates, Furniture-Casters, and other Similar Uses, of which the following is a specification.

My invention relates to the construction of a roll of several disks of rawhide, to the method of making the same, and to a mode of attaching a metallic bushing to the same, and is illustrated in the accompanying drawings, in which—

Figure 1 is an isometrical view of my improved roll. Fig. 2 is a sectional view of the same, showing the metallic bushing. Fig. 3 is an end view of the roll. Fig. 4 is a sectional view of the roll when the metallic bushing is not used. Fig. 5 shows the metallic bushing; Fig. 6, the rawhide roll prepared to receive the bushing, and Fig. 7 shows one of the corrugated nails.

Similar letters refer to similar parts in the several views.

The method of making my improved roll is as follows: I first take several circular pieces or disks of rawhide somewhat larger than the desired roll, and, as rawhide is always more or less warped, I subject the disks separately to a pressure sufficient to take out the "warp." I then remove all the porous or "flesh side" of the hide by means of a revolving wheel or roll covered with sand-paper or emery. These circular pieces I then cement together with any suitable leather-cement, using as many pieces as necessary to form a roll of the desired thickness. I then bore the hole H through the center, and, placing the roll upon an arbor, turn the roll to the desired size and thickness. I then bore six holes nearly, but not quite, through the roll, to receive the nails *a a'*, each hole being considerably smaller than the nail to be inserted, three equidistant holes being bored from one end, as at *a a a*, and between these I bore three from the opposite end, *a' a' a'*, Fig. 3. The roll is then placed on end, and three of the nails *a a a*, having their points first inserted in the holes, may have a follower so arranged and operated by a hand-lever as to force all three of the nails into the roll simultaneously; or any known method of forcing in

the nails may be used. The roll is then turned over and the three nails *a' a' a'* forced in in the same manner.

The nails may be plain, as shown in Figs. 2 and 4; but I prefer to use nails having two opposite sides corrugated, as shown at *e e*, Fig. 7.

In case it is desirable, I turn the outside disks of rawhide so as to leave a boss, as at F F, Fig. 4.

Whenever a metallic bushing is desirable, I use a tube, B', long enough to reach entirely through the roll, and having the flange or head B at one end and a screw-thread, *d'*, Fig. 5, at the other, upon which is screwed the flange or head C, having a short tube, G, and an internal screw-thread fitting the end of the tube B'. A hole, E, is bored through the roll of a size to fit the tube B', and a recess or chamber, D, is made at one side to receive the short tube G. This bushing is inserted in the roll and the heads B and C are firmly drawn against the sides of the roll by means of the screw-thread, as shown in Fig. 2.

The above-described roll is specially adapted to be used in roller-skates, as the rawhide is stiff and unyielding, and runs over the surface of the floor with as little friction as rolls made of wood, and much easier than rolls of rubber or other similar elastic material, and, as it has no grain, rendering it liable to become checked or split, it is preferable to wood. It also entirely obviates the rattling noise attendant upon the use of wood rolls. My improved roll is also adapted to be used in furniture-casters and for many similar purposes, and such use comes within the scope and purpose of my invention.

I am aware that rolls for roller-skates have been heretofore used made of leather, rubber, or other elastic material, and I am also aware that rolls have been made with a metallic core or bushing passing through their center, and having flanges or disks attached thereto, and pressing against the sides of the roll; also, that rolls have been made with such a bushing or core and having a flange or disk attached to one end and a removable disk screwed upon the opposite end, so as to compress the roll. Such a construction is shown in Letters Patent No. 255,460, March 28, 1882.

I do not claim, broadly, the use of leather, rubber, or other elastic material forming the

body of the roll; neither do I claim, broadly, the use of a metallic bushing or core; nor do I claim such a bushing or core with flanges or disks pressing against the sides of the roll, whether the same are attached to the central core or bushing by means of screw-threads or otherwise.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A wheel or roll for skates, consisting of disks of rawhide having the flesh side removed, and the several disks attached to each other by means of cement, as and for the purpose set forth.

2. A wheel or roll for skates, consisting of several circular disks of rawhide cemented together, and having nails *a* and *a'* forced in from each end, each nail being larger than the hole made to receive it, and the nails passing nearly but not quite through the several layers of rawhide, as and for the purpose set forth.

3. A wheel or roll for skates, consisting of several disks of rawhide cemented together, and having nails passing nearly through the same, the nails having the two opposite sides corrugated, as at *e e*, as and for the purpose set forth.

4. In a roll for roller-skates, the combination, with a metallic bushing or tube, *B'*, having a head or flange, *B*, and screw-thread *d'*, and a nut formed of a short tube, *G*, with an

internal screw-thread, and having a flange, *C*, at its outer end, of a roll bored to receive the tube *B'*, and having a chamber, *D*, to receive the tube *B'*, so as to allow an increase of the bearing of the nut on the screw *d'* without increasing the thickness of the roll, as described, and for the purpose set forth.

5. The above-described process of making a rawhide wheel or roll for skates, consisting of preparing a series of disks by pressing out the warped surfaces and removing the flesh side, and cementing these several disks together, boring them through the center, and turning the roll on an arbor to the desired size and thickness, then forming a series of holes from each end partially through the roll and forcing into the holes nails somewhat larger than the holes, so the rawhide will press against the sides of the nail and hold them from being drawn out by the strain upon the rawhide disks, as and for the purpose set forth.

6. As an article of manufacture, a roll or wheel for roller-skates and other analogous uses, composed of several layers of rawhide, each having the flesh side removed, and all suitably and securely joined together, as and for the purpose set forth.

GEO. F. RICE.

Witnesses:

R. B. FOWLER,
H. M. FOWLER.

(No Model.)

C. A. STODDARD.

ROLLER SKATE.

No. 288,508.

Patented Nov. 13, 1883.

Fig. 1.

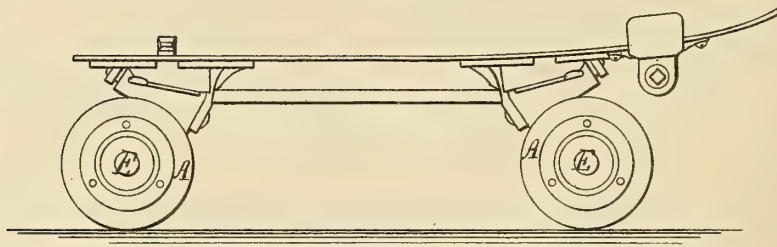


Fig. 2.

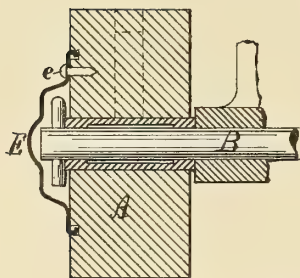


Fig. 3.

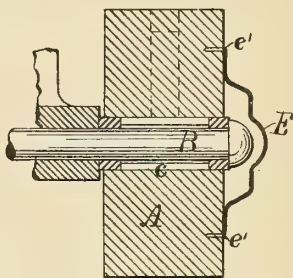


Fig. 4.

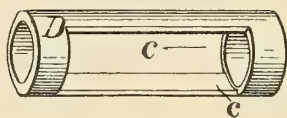


Fig. 5.

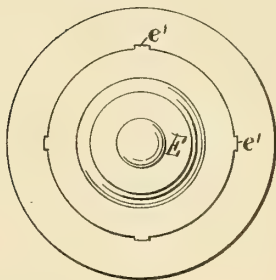
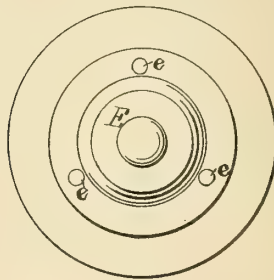


Fig. 6.



WITNESSES:

C. H. Leutter Jr.
Wm. L. Cook,

INVENTOR:

Charles A. Stoddard
by Joseph A. Miller & Co
Attys

UNITED STATES PATENT OFFICE.

CHARLES A. STODDARD, OF PROVIDENCE, RHODE ISLAND.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 288,508, dated November 13, 1883.

Application filed January 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. STODDARD, of the city and county of Providence and State of Rhode Island, have invented a new and useful Improvement in Roller-Skates; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in the axle-bearings of the rollers of skates, and in the means for lubricating the same.

The invention consists in providing the bearing in the rollers with one or more chambers, and in protecting the outer side of the rollers with a shield, so as to prevent the loss of oil and soiling of garments, as will be more fully set forth hereinafter.

In roller-skates it is important that the bearings of the rollers shall be well lubricated, so as to make them turn with the least possible frictional resistance. In use, when the rollers are rapidly revolving, the centrifugal force throws the oil outward on the sides of the rollers, and usually more oil is so thrown outward on the outside of the rollers than on the inner side. The oil so thrown out not only causes waste of oil and necessitates repeated oiling, but the garments of the skaters are injured by this oil.

The object of this invention is to avoid the loss of oil and injury to the clothing, and for this purpose I form cavities in the bearing of the rollers, into which the oil is drawn by the centrifugal force, and thus prevented from escaping at the ends of the bearings, and I also protect the outside of the roller by means of a shield, so that no oil can escape from the bearing.

Figure 1 is a side view of a skate the rollers of which are provided with my protector-shields. Fig. 2 is a sectional view of a roller provided with a bushing and the shield. Fig. 3 is a sectional view of a roller provided with a bushing and a shield. Fig. 4 is a perspective view of my improved bushing. Fig. 5 is a view of a roller provided with a shield, and Fig. 6 is a view of a roller provided with a shield secured with nails or screws.

In the drawings, A A are the rollers of a roller-skate.

B B are the axles.

C C are the internal cavities. These cavities may be formed by cutting away a portion of the tube forming the bushing, as is shown in Fig. 4; or a central cavity may be formed in the bearing of the roller, so that no bushing is required; or a hole may be bored into the roller and plugged up at the thread or periphery, so as to form a cavity, into which the oil can be drawn by centrifugal force when the roller is rotating, and from which the bearing will receive oil whenever the motion is slow or arrested. It is obvious that, if desired, two or more such holes can be made in the roller. The holes are indicated in Figs. 2 and 3 in broken lines.

D is a metal bushing formed out of a tube, having two pieces, C C, cut away in the center to form cavities for the reception of the oil. These cavities may be filled with some absorbent material; but they will answer their purpose fully without such filling. As shown in Figs. 2 and 3, the bushing bears at the ends only on the axle, so that the surface in contact is small. These bushings may be readily renewed when worn, and the life of the rollers materially extended. An important improvement consists in the fact that the rollers wear, when not bushed, rapidly endwise, and washers have to be used, while the metal bushings wear but little endwise, and can be cheaply renewed when worn, thereby keeping the rollers of a roller-skate always in their true position—a fact appreciated by fancy skaters.

To prevent any oil that may escape on the outside of the roller from soiling the garments, I secure the cap E, made of metal or other suitable material, to the outside of the roller, either by screws, nails, by points forming part of the cap, or in any other suitable manner. The cap E is dish-shaped, so as to allow the end of the axle and pin for holding the roller to be covered by the cap and not be in contact with the same.

e e are nails or screws by which the cap is secured, and *e' e'* are points formed with the cap and forced into the wood of the rollers. As the rollers are usually of lignum-vitæ or

box-wood, a groove can be undercut into the sides, and the cap E, of light metal, sprung into the same, and the cap thus rigidly secured.

To prevent the escape of oil at the junction of the cap or shield E with the roller, I turn a groove into the face of the roller and form the cap or shield with a flange, which enters the groove, so as to make a tight joint, through which no oil can be drawn by the centrifugal force of the rotating roller, thus forming an oil-reservoir.

When the bearing is formed in the wood of the roller without any metal bushing, a metal ring may be secured on the faces of the roller, so as to guard against the lateral wear of the wooden roller against the bearings, as it is important to prevent such lateral wear, by which the rollers are placed out of line by the unequal wearing of the wood of the several rollers.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the roller A of a roller-skate, provided with a groove on its outer face, of the shield E, provided with a flange at its outer edge, constructed to enter the groove and make an oil-tight joint, as described.

2. The combination, with the roller of a roller-skate, of a metal bushing having a bearing near the ends only, as described.

3. In a roller-skate, the combination, with the fixed axle B and the roller A, of the metal bushing D, forming the bearings on the axle at the ends only, and the shield E, constructed to retain the oil when the skate is in use, as described.

CHARLES A. STODDARD.

Witnesses:

JOSEPH A. MILLER,
M. F. BLIGH.

(No Model.)

S. HIPKISS.
ROLLER SKATE.

No. 289,099.

Patented Nov. 27, 1883.

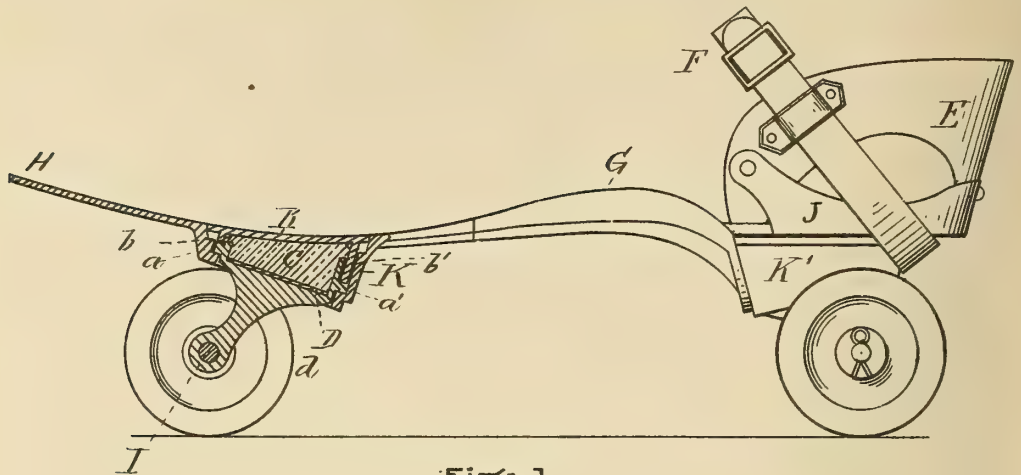


Fig: 1.

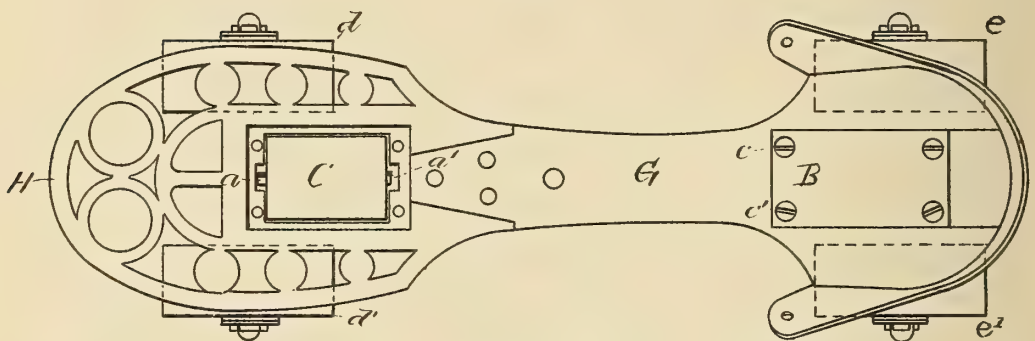


Fig-2.

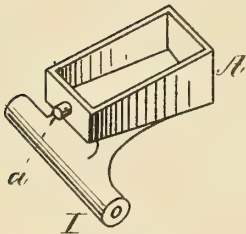


Fig. 3.

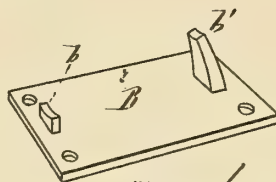


Fig-6.



Fig-4.

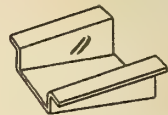


Fig. 5.

WITNESSES

Frank G. Parker
Chas. Spaulding.

INVENTOR

Samuel Hipkins
by
J. B. H. Brown
Atty

UNITED STATES PATENT OFFICE.

SAMUEL HIPKISS, OF STONEHAM, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 289,099, dated November 27, 1883.

Application filed June 4, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HIPKISS, of Stoneham, in the county of Middlesex and Commonwealth of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to the class known as "roller-skates," and has for its object simplicity of construction, strength, and durability.

The devices whereby the wheels and rollers are attached to the foot-support of the skate are arranged in such a manner as to enable the performer to describe all the various evolutions desired while accomplishing complicated and dexterous movements.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of my improved roller-skate. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of the roller hanger and frame. Fig. 4 is a perspective view of the rubber packing or cushion. Fig. 5 is a perspective view of the guard for the rubber packing or cushion. Fig. 6 is a perspective view of the adjustable plate which covers the packing-box K, which forms an integral part of the foot support or standard of the skate.

Similar letters of reference indicate corresponding parts.

The foot-support or the standard is designated by the letters H and G, to which are connected heel and toe straps. The toe-straps are connected in the usual manner. At the heel are used the support E, connected to the metal plate J, (which is by preference an integral part of the foot-support,) and the adjustable heel-strap F, which passes through the loop *e* and under the heel of the foot-standard. The foot-standard H and G, composed of some suitable material, as iron or wood, I preferably make in two parts, as shown in the plan view, Fig. 2. These are connected in the usual manner, and are each provided with a packing or hanger box, K K', in which the roller-hanger A is secured. The roller-hanger consists of the packing-box A, provided with the pivots *a a'* and the roller-frame I. The same roller-hanger is used in both the toe and heel of the foot-standard, and is connected with the packing-box K and K' by the

pivots *a a'*, which rest in bearings made for them in the interior of the packing-box K K', as shown in Figs. 1 and 2. The elastic cushion C (preferably of rubber) is made of such form and proportion as to fill the hanger-box A and the upper portion of the packing-boxes K K'. The guard D, for the rubber packing or cushion, consists, preferably, of a thin elastic piece of rubber or metal, and is made of such shape as to conform to the rubber packing or cushion C and the hanger-box A. The adjustable plate B is provided with two projecting prongs, *b b'*, adapted to act as bearings on the pivots *a a'*, to prevent, if desired, the perpendicular motion of the hanger A, and also to protect the rubber cushion C. The rollers *d d' e e'* are attached to the roller-frame I, as shown in Fig. 2. The hanger A has an upward motion and the hanger-frame I a lateral motion, both regulated and adjusted by the rubber packing or cushion C.

The action of the hanger A and the adjacent members is as follows: The hanger A is placed in position in the outside packing or hanger box, K K', and the rubber cushion C, upon which has been placed the guard D, is inserted in the hanger-box A. The adjustable plate B is placed upon the top of the rubber cushion C, so that its bearings *b b'* project down toward the pivots *a a'*. The plate B is secured to the foot-standard by screws *c c'*. If no perpendicular motion of the hanger A is desired, the plate B is secured firmly to the foot-standard, as shown in Fig. 2. If a slight pressure is required, the plate B is eased by slightly loosening the screws by which it is attached. In the same way the lateral pressure is regulated which is communicated by the packing-box A from the rubber cushion and the hanger-frame I, so that the hanging frame always quickly assumes a horizontal position automatically when it has received a lateral motion by the movements of the performer. The superiority of this mode of attaching the roller-frame to the foot-standard of the skate is readily seen by the ease with which the roller-frame can be removed when it is desired to repair the same, or to otherwise adjust the parts. The rubber packing is confined in such a manner that it cannot be expanded externally, and its whole resistive power is brought to bear on the sides of the hanger or packing box A, on

the sides of the hanging or outside packing boxes, K K', and on the plate B. It will be seen that the elastic cushion C gives an easy perpendicular motion to the hanger A when
 5 desired, and also a lateral elastic resistance, and that the adjustable plate may be so pressed upon the cushion that by the aid of the projecting prongs *b b'* the packing or elastic cushion C, in its perpendicular action, becomes a
 10 non-elastic body. To prevent the wear of the rubber by the friction of the sides of the packing-box A and its adjacent parts, it is provided with a guard, which I preferably make of thin elastic metal. Both the toe and heel
 15 of the foot-standard are provided with the same hanger-box and frame, which are connected to the foot-standard in the same manner and act in the same way, excepting that the frames are oppositely inclined toward the
 20 two ends of the foot-standard, as shown in Fig. 1.

My invention is shown with four rollers; but I do not limit the invention to that special class, as it can be applied to skates having any
 25 number of wheels, ranging from two to eight.

The heel strap or guard E is provided with an adjustable strap, F, which moves loosely through the loop on the support E under the heel of the foot-standard. By this arrange-
 30 ment I am enabled to effect a much more easy and snug connection of the heel of the standard with the foot of the performer.

I am aware that an elastic cushion has been used between a pressure-plate and the upper
 35 surface of a truck-frame, and that the pressure-plate has been regulated in its operation by a screw, and I do not claim such invention.

Having thus described my invention, what I claim is—

1. In a roller-skate, the adjustable plate B, 40 provided with the projecting prongs *b b'*, and operated substantially as described, whereby the motion of the roller hanger and frame is adjusted and regulated.

2. In a roller-skate, the roller hanger and 45 frame, consisting of the inner packing-box, A, adapted to receive an elastic packing, the pivots *a a'*, and roller-frame I, substantially as described.

3. In a roller-skate, the outside packing-box, 50 K, forming an integral part of the foot-standard, provided with bearings in its interior for receiving the pivots of the roller-hanger, substantially as described.

4. In a roller-skate, the hanging or packing 55 box K, provided with bearings, as described, in combination with the hanger-frame A, provided with the pivots *a a'*, the adjustable plate B, an elastic cushion, and the guard, all arranged substantially as described, and for the 60 purpose set forth.

5. In a roller-skate, the combination of a hanger or packing box, forming an integral part of the foot-standard, with a hanger-frame 65 consisting of an inner packing-box having pivots, an adjustable plate adapted to cover the hanger or packing box, and an elastic cushion arranged between the adjustable plate and the inner packing-box, all arranged substan- 70 tially as described, and for the purpose set forth.

In witness whereof I have hereunto set my hand.

SAMUEL HIPKISS.

Witnesses:

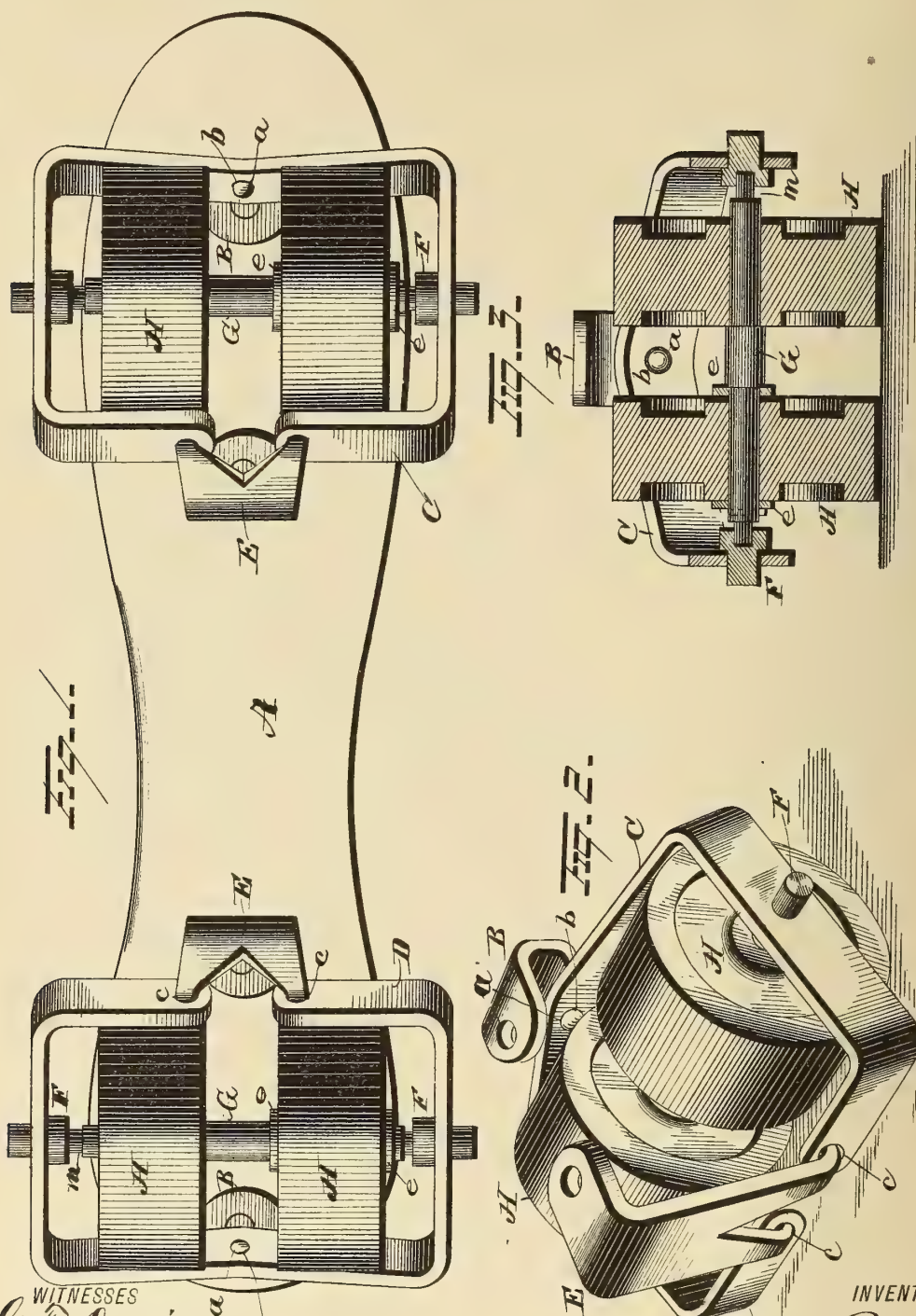
WM. B. H. DOWSE,
 HARVEY H. PRATT.

(No Model.)

A. PEELER.
ROLLER SKATE.

No. 291,000.

Patented Dec. 25, 1883.



WITNESSES
G. P. Downing,
George Cook.

INVENTOR
Albion Peeler
By W. A. Loggins,
Attorney

UNITED STATES PATENT OFFICE.

ABNER PEELER, OF FORT DODGE, IOWA, ASSIGNOR OF ONE-HALF TO
WILLIAM L. NICHOLSON, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 291,000, dated December 25, 1883.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, ABNER PEELER, of Fort Dodge, in the county of Webster and State of Iowa, have invented certain new and useful
5 Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-

10 My invention relates to an improvement in roller-skates, the object being to provide a device of this character which shall be simple and economical in construction, and at the same time durable and efficient in use; and
15 with these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter pointed out in the claims.

In the accompanying drawings, Figure 1 is a
20 bottom plan view of my improved skate. Fig. 2 is a detached view of one of the trucks. Fig. 3 is a sectional view of the same.

A represents the wooden stock or foot-stand of the skate, made of any desired size and
25 shape. To this stock are removably secured the depending supports B, one being placed at the rear end and the other near the forward end of the said stock.

C D represent two yokes, preferably bent
30 into the form shown, the ends of each yoke not quite meeting. The front side of the yoke C and rear side of the yoke D are each provided with a perforation, *a*, in which fit the lugs or projections *b* on the ends of the sup-
35 ports B. The ends of each yoke are also provided with perforations *c*, in which fit the bent ends of the depending bifurcated supports E, which are also removably secured to the stock A, the supports E being somewhat
40 longer than the supports B, and thus retaining the frames C and D in inclined positions.

It will be seen that in order to detach the yoke or frame it is simply necessary to loosen
45 either of the supports B or E, and also that by this arrangement a rocking movement is afforded the frames or yokes.

In the sides of the frames C and D are movably secured the journal-boxes F, the inner ends of which are provided with flanges, to

prevent them from being pushed out of the 50 frames when the skate is in use. In these boxes F are journaled the axles G, to which latter are secured the wheels H. One of the wheels on each axle is rigidly secured thereto, 55 and the other wheel allowed to revolve thereon, the washers *e* serving to keep the latter in place. These axles G are made sufficiently long to bear against the outer closed ends of the boxes, said axles being provided with a 60 shoulder, *m*, at a sufficient distance beyond the flanges on the inner ends of the boxes. By hardening the ends of the axle and the journal-boxes it will take years of wearing before the flanges touch the said shoulder.

My invention is simple in construction, 65 strong, and light, and can be manufactured at a small initial cost.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 70

1. In a roller-skate, the combination, with a stock or foot-stand, of trucks, each consisting, essentially, of two depending supports, one of the latter being bifurcated, and a yoke 75 mounted on the support, as shown, and provided with an axle and wheels, substantially as set forth.

2. In a roller-skate, the combination, with a stock or foot-stand, of trucks, each consisting, essentially, of two depending supports, one 80 of the latter being bifurcated, and a yoke or frame mounted on the said supports, an axle mounted in the yoke, and wheels mounted on the axles, one of said wheels being rigidly secured to the axle and the other adapted to revolve on same, substantially as set forth. 85

3. In a roller-skate, the combination, with a stock or foot-stand, of trucks, each consisting, essentially, of two depending supports, one of the same being bifurcated, the other 90 provided on the end with a lug or projection, and a yoke or frame, the ends of which are provided with perforations, in which fit the ends of the bifurcated support, and also provided on the opposite side with a perforation, 95 in which fits the lug or projection on the other support, an axle journaled in boxes movably secured in the yoke, and wheels, one rigidly

secured to the axle, the other revolving thereon, substantially as set forth.

4. In a roller-skate, the combination, with the stock, of trucks constructed substantially as described, axles journaled in boxes movably secured in the trucks, and wheels mounted on said axles, one of the wheels being rigidly secured thereto and the other adapted to revolve thereon, the same being kept in place by washers, substantially as set forth.

5. In a roller-skate, the combination, with the stock, of trucks, axles journaled in boxes movably secured in trucks, said axles bearing against the outer closed end of said boxes, and provided with shoulders, as described, and wheels mounted on said axles, one of the wheels being rigidly secured thereto and the

other adapted to revolve thereon, the same being kept in place by washers, substantially as set forth.

6. In a roller-skate, the combination, with a stock, of an axle mounted in a suitable truck, and wheels mounted on the axle, one of the said wheels being rigidly secured thereto, the other adapted to revolve thereon, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ABNER PEELER.

Witnesses:

C. H. PAIGE,

F. W. PAIGE.

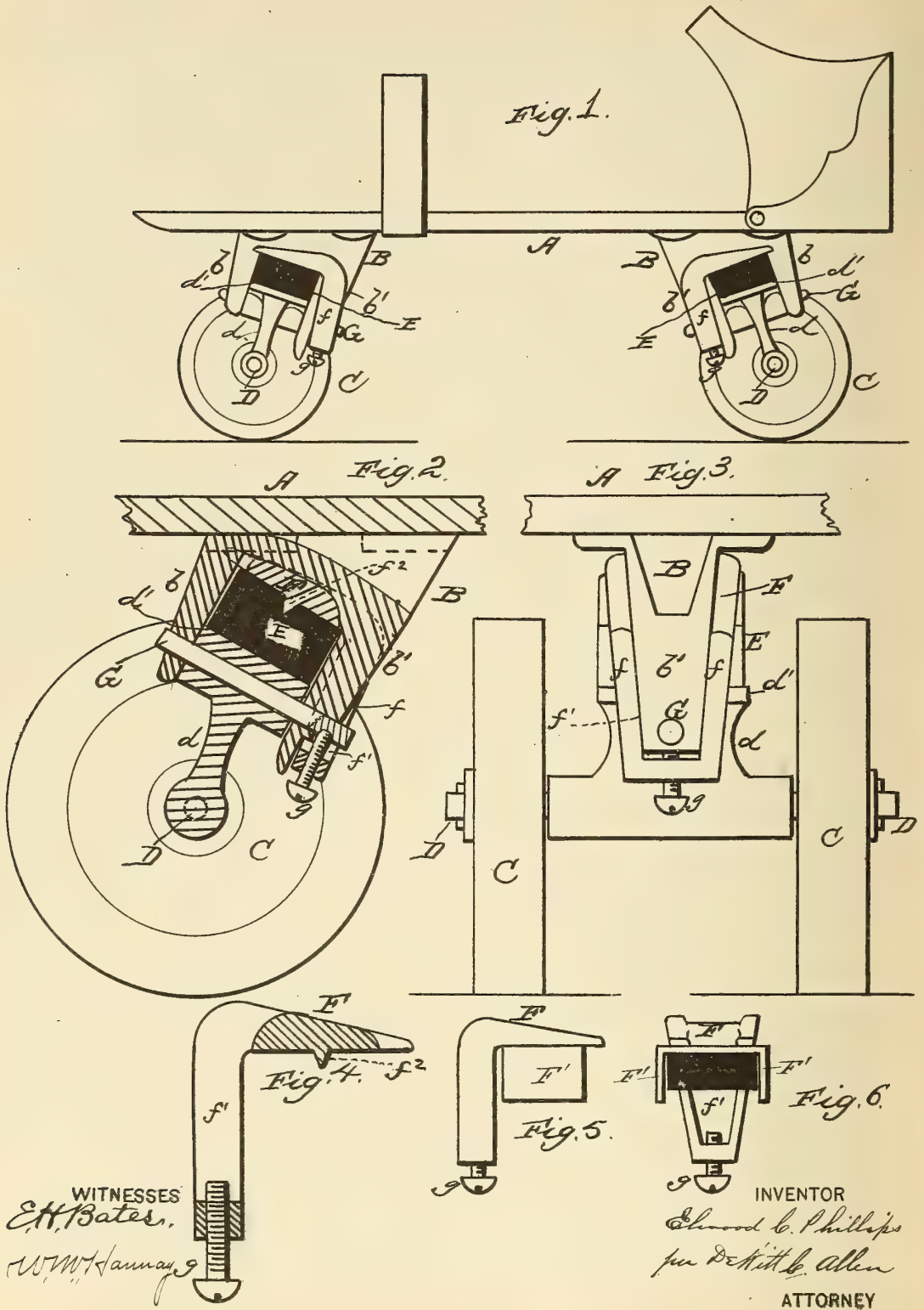
(No Model.)

E. C. PHILLIPS.

ROLLER SKATE.

No. 292,850.

Patented Feb. 5, 1884.



UNITED STATES PATENT OFFICE.

ELWOOD C. PHILLIPS, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 292,850, dated February 5, 1884.

Application filed December 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD C. PHILLIPS, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of roller-skates in which the foot-piece has a sidewise rocking motion, and is provided with two pairs of rollers—one pair at the toe and the other pair at the heel portion of the skate; and it has for its object the production of skates that, while being light and inexpensive, will be strong and durable; and to this end the invention consists in novel features of construction and combination and arrangement of parts, as will be fully hereinafter described, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved skate having one roller of each pair removed; Fig. 2, a longitudinal vertical central section through the rear or front portion of the skate. Fig. 3 is a front view. Figs. 4, 5, and 6 are detail views.

In the drawings, A represents the sole or foot plate of the skate, formed of wood or metal, as may be preferred, and provided with toe and heel straps, as usual, for securing it to the foot of the wearer.

To the under side of the foot or sole plate A, and near the heel and toe, are secured metallic plates B B, each one having downwardly-projecting hangers *b b'*, said hangers having perforations near their lower ends, for the purpose hereinafter described. The rollers C C are loosely mounted on axles D D, arranged transversely under the heel and toe portions of the foot or sole piece, and said axles are cast integral with standards *d d*, terminating at their upper portions in flat seats *d' d'*, upon which rest the rubber cushions E E. The standards *d d* are perforated longitudinally immediately beneath the seats *d' d'*, for the purpose hereinafter described.

Interposed between the plates B B and the rubber cushions and their seats are plates F F, which rest immediately upon the rubber cushions, and upon which in turn rest the plates

B B. Said plates F F each have a downwardly-projecting flange, *f*, slotted, as at *f'*, said flange being at a right angle to the plate F. Each plate F, at about its center, is provided with a spur, *f*², which is adapted to enter a corresponding depression in the rubber cushion, and serves to maintain said cushion in position, while at the same time it does not interfere with the proper operation of said cushion. The lower portion of the downwardly-projecting flange *f* is provided with a screw-threaded perforation to receive a screw, *g*, for the purpose hereinafter described. The plates B B are adapted to rest immediately upon the plates F F, said plates F F being embraced between the hangers *b b'*, the hangers *b'* passing down between the slotted flanges *f*, and said hangers *b b'* straddling the cushions E E.

After the parts are placed in position, as above described, a pin, G, is passed through the perforations in the hangers *b b'*, and through the perforations in the standards *d d*, above described, said pins serving not only to secure the parts in position, but also forming pivots upon which the foot or sole plate of the skate is adapted to rock. Said pins G are each provided at one end with a recess adapted to register with the perforation in the lower end of the flange *f* of the plate F, and the screw *g* enters said recess and firmly locks said pin in place against all liability of accidental displacement.

In the event of the rubber cushions E E becoming worn, the wear may be taken up or compensated for by screwing up the screws *g*, thus compressing said cushions between their seats and the plates F F.

To prevent the oil used for lubricating the wheels or pin G from coming in contact with and injuring the rubber cushions, I provide the plate F with side wings, F', extending downwardly past the lower edge of said cushions. These wings F' may be formed in one piece with the plates F, or of separate pieces.

If, for any reason, it should prove desirable to remove the cushions or detach the parts, the screws *g* have only to be loosened, when the pins G may be withdrawn and the parts detached.

From the above description it will be readily seen that while the foot or sole piece of the skate permits of a free rocking motion upon

the rollers, the wear of the cushions can be compensated for without detaching or disarranging any of the parts.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination of the plate B, having downwardly-projecting hangers *b b'*, the plate F, having slotted flange *f*, the seat *d'*, elastic cushion E, and pin G, constructed and arranged substantially as described, and for the purpose set forth.

2. In a roller-skate, the combination of the plate B, having downwardly-projecting hangers *b b'*, the plate F, having slotted flange *f*, the seat *d'*, elastic cushion E, pin G, and screw *g*, substantially as and for the purpose described.

3. In a roller-skate, the combination of the plate B, having downwardly-projecting hang-

ers *b b'*, the plate F, having slotted flange *f*, and provided upon its under side with a spur, *f*², the elastic cushion E, having a depression to receive said spur, the seat *d'*, the pin G, having a recess near one end, and the screw *g*, all constructed and arranged in the manner described, and for the purpose set forth.

4. In a roller-skate, the combination of the plate B, having downwardly-projecting hangers *b b'*, the plate F, having side wings, *F'*, and slotted flange *f*, the seat *d'*, elastic cushion E, and pin G, constructed and arranged substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ELWOOD C. PHILLIPS.

Witnesses:

WILLIAM P. JAY,
JAMES W. HENDERSON.

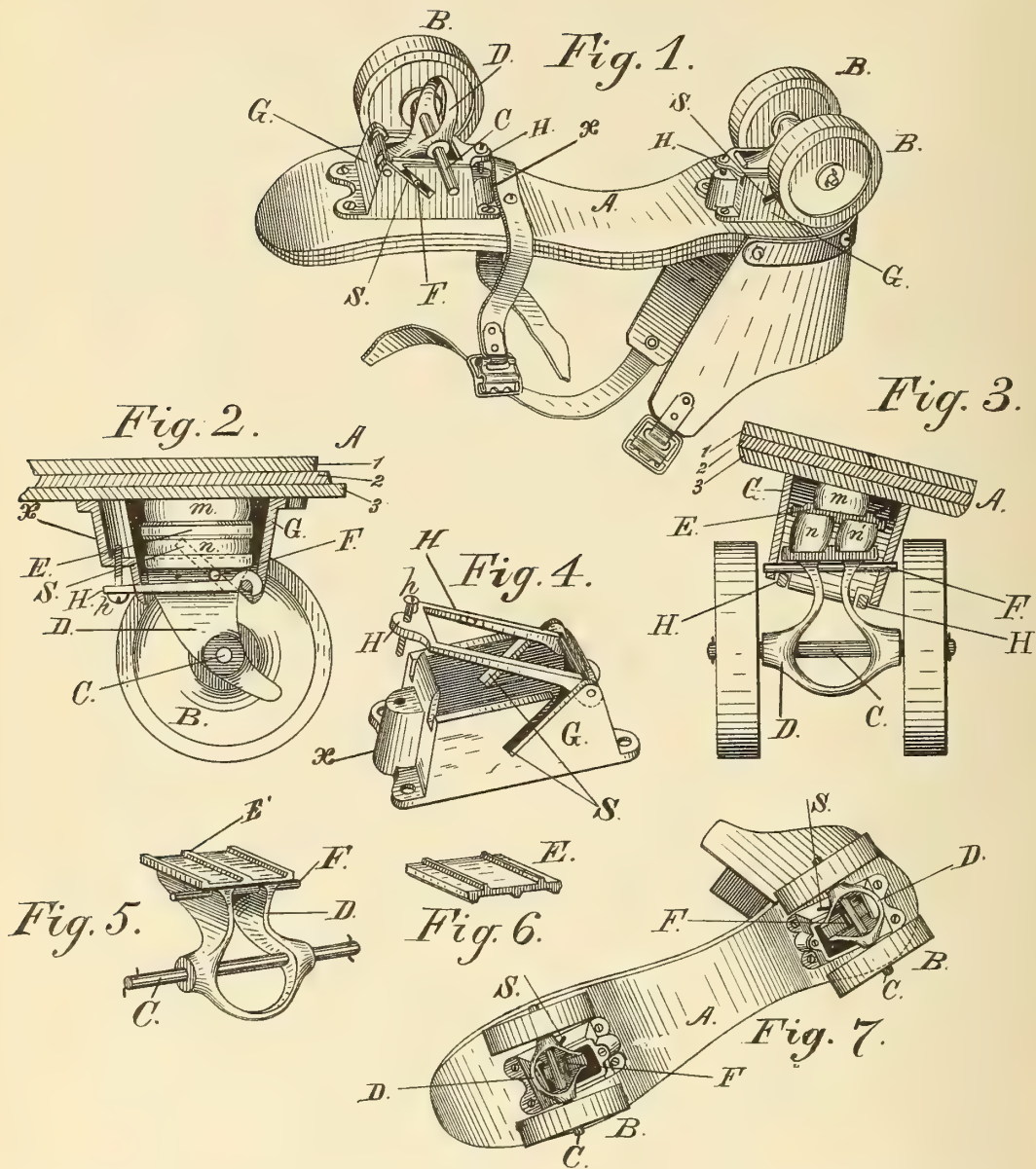
(No Model.)

J. V. ROWLETT.

ROLLER SKATE.

No. 292,862.

Patented Feb. 5, 1884.



Witnesses,

Fred. F. Rost
Edward Kreimeier

Inventor,

Jacob V. Rowlett
by Wm T. Dennis
his attorney

UNITED STATES PATENT OFFICE.

JACOB V. ROWLETT, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 292,862, dated February 5, 1884.

Application filed August 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, JACOB V. ROWLETT, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of roller-skates in which the foot-piece has an oscillating motion upon the trucks laterally, and in which the trucks are permitted an independent oblique movement relatively to the foot-piece.

My invention consists in a foot-piece of two or more layers or strips connected together, which may be molded or shaped to the foot, if desired.

It further consists of a rectilinear case or housing secured to the under side of the foot-piece, to which the truck-hangers are attached, and which incloses the springs, the vertical sides of which are provided with angular slots, in which a horizontal shaft has its bearing. This shaft is secured to and controls the upper portion of the truck-hangers, and is actuated laterally by the pressure exerted upon the springs which carry the foot-piece.

It further consists in the arrangement of three cube-shaped springs, one placed immediately above the two placed side by side.

In the drawings, Figure 1 is a perspective view of my skate in an inverted position. Fig. 2 is a vertical longitudinal section of one of the trucks, showing the operating parts in position. Fig. 3 is a vertical cross-section of the same. Fig. 4 is a perspective view of the case or housing, showing the angular slots in the sides and the hinged frame by which pressure on the springs is regulated, and also showing the lugs by which the housing is secured to the foot-piece. Fig. 5 is a perspective view of the truck-hanger, showing the axle of the truck, the plate forming the top of the truck-hanger, and the shaft traversing the upper portion of the same, and also showing the upper surface of the top-plate. Fig. 6 is a perspective view of an intermediate pressure-plate, showing its manner of construction. Fig. 7 is a plan view of the bottom of the foot-piece, showing the trucks standing obliquely relatively to each

other and to the vertical plane of the foot-piece.

Like letters refer to like parts.

In Fig. 1, A is the foot-piece of a roller-skate of the ordinary form, and composed of two or more pieces of wood or other suitable material.

B B are the wheels of the common form, and C C the axles upon which the wheels revolve.

D is the truck-hanger, in the form of a loop at the lower end, and provided with hubs on its opposite arms to receive the axle C, as seen in Fig. 3.

G is the housing or case containing the springs and plates, as hereinafter described. It consists of a rectilinear case or box, the sides of which are provided with oblique slots, open at the lower edge of the side, and extending upward and backwark in the front truck, and upward and forward in the rear truck. The ends and sides of the housing incline inward from the top, and the opening in the bottom is smaller than at the top. The upper portion of one end of the housing has a semi-circular projection, *x*, hollow, and having its bottom plate provided with a hole having a screw-thread to receive a set-screw.

H is a rectilinear frame, in size made to correspond with the dimensions of the inside surface of the bottom of the housing G. The open end of the frame H terminates in curved jaws, which engage a belt or rod running parallel with the end of the housing and within it, forming a hinge, which allows the curved end of the frame H a vertical motion, as seen at Fig. 4.

Within the housing G, and in contact with the lower surface of the foot-piece A, is a cube-formed rubber spring, *m*, resting upon the plate E, which is of rectilinear form and of proper size and shape to fit the inner surface of the housing G. The plate E in turn rests upon two distinct and separate springs, *n n'*, of similar form to *m*. These springs *n n'* rest upon the plate E', which forms the top part of the truck-hanger D. The plate E' has ribs raised on the edges and a corresponding rib in the center, the spaces between the ribs forming seats for the springs *n n'*, Fig. 3. The housing G, carrying the foot-piece A, is permitted an oscillating motion laterally by the depression

of the springs as the weight of the skater is thrown from side to side.

The shaft F passes through the upper part of the truck-hanger D at right angles with the sides of the housing G, and traverses at either end the slots S in the sides of the housing. As the foot-piece and housing are inclined to either side, the end of the shaft F on the side which is depressed is carried upward and forward in the slot S, carrying with it the truck-wheel on that side, and by that means the truck is swiveled, so as to produce a curvilinear motion of the skate. The housing of the rear and front trucks are reversed, so that the slot S in each tends upward. Toward the center of the skate a set-screw, *h*, passes through a projection upon the closed end of the hinged frame H, having its seat in the semicircular projection *x* of the housing G. The side bars of the frame H come in contact with edges of the plate E', when the screw *h* is tightened, and as the plate E' is raised by the action of the screw greater density and rigidity is imparted to the springs *m n n'* by the pressure so produced, and a correspondingly-increased side pressure is required to be exerted by the skater in tilting the skate and in deflecting the truck from a direct line. The pressure upon the springs is increased or diminished by the set-screw *h*, Fig. 2.

In Fig. 4 the housing G is clearly shown with the frame H attached, as before described, as also the slots S.

In Fig. 7 the trucks are shown as being out of line, or in the position which they assume relatively to each other when influenced by the side pressure indicated in Fig. 3, by which a curvilinear path is traversed by the skate.

The arrangement of the springs *m n n'* in pyramid form renders the tilting of the foot-piece easier of accomplishment and gives the oscillations a wider range. In the act of skat-

ing, when the weight is thrown upon the front truck and the foot-piece tilted, that truck alone is deflected from the line of direction, and the same effect is produced by throwing the weight upon the rear truck, the trucks having independent action in reference to the direction required.

The foot-piece A being composed of two or more layers of wood or other material made to adhere, renders it capable of being formed or molded into any required modification of the common shape that may be desirable to produce an easy and snug conformation to the shape of the foot or the shoe of the skater.

I disclaim the use of two or more pieces or layers of wood placed upon each other and cemented together in the formation of a foot-piece for roller-skates.

Having thus fully described my said improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The housing G, composed of vertical walls open at top and bottom, and provided with a semicircular projection, *x*, in the manner and for the purpose set forth.

2. The truck-hanger D, provided with plate E', shaft F, and carrying-axle C, in the manner and for the purposes set forth.

3. The springs *m n n'*, in combination with plates E E' and shaft F, as herein set forth.

4. The combination of the housing G, the springs *m n n'*, the frame H, the shaft F, with the truck-hanger D, all arranged and operating as described.

In testimony whereof I affix my signature in presence of witnesses.

JACOB V. ROWLETT.

Witnesses:

S. J. MCLEMORE,
W. C. WEYMAN,
JAMES G. AYDELOTT.

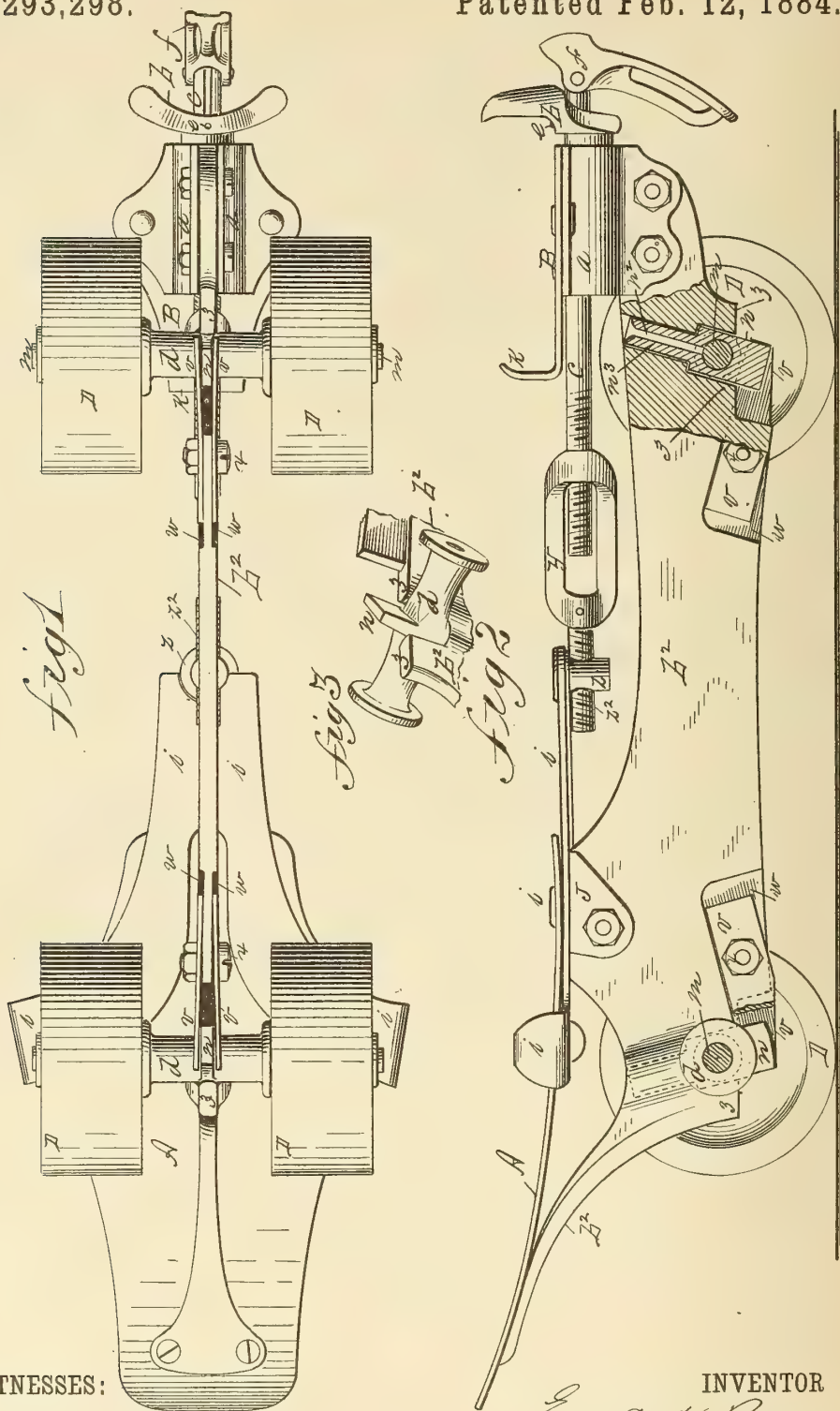
(No Model.)

E. H. BARNEY.

ROLLER SKATE AND SKATE FASTENING.

No. 293,298.

Patented Feb. 12, 1884.



WITNESSES:

J. D. Garfield
Wm. H. Chapin

INVENTOR

Everett H. Barney
BY *Henry A. Chapin*

ATTORNEY

UNITED STATES PATENT OFFICE.

EVERETT H. BARNEY, OF SPRINGFIELD, MASSACHUSETTS.

ROLLER-SKATE AND SKATE-FASTENING.

SPECIFICATION forming part of Letters Patent No. 293,298, dated February 12, 1884.

Application filed December 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, EVERETT H. BARNEY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Roller-Skates and Skate-Fastenings, of which the following is a specification.

This invention relates to improvements in roller-skates, and in devices for fastening skates to the shoe of the wearer, the object being to provide improved journals and means for securing the latter to the skate-frame; to provide improved means for bringing the journals and axles back to a position at right angles to the frame after they shall have been swung around to direct the skate in a curved track, and for preventing the journals from swinging too far; to provide improved means for lubricating the journals and axles and the journal-post from a common source, and to provide in a skate a non-rotating draw-bar having a heel-clamp movably secured thereto, the latter being operated by a cam-lever, and double or other acting screw-adjustment between said draw-bar and sole-plates.

In the drawings forming part of this specification, Figure 1 is a bottom plan view of a skate embodying my improvements. Fig. 2 is a side elevation, partly in section; and Fig. 3 is a perspective view of the under side of the journal and a section of that part of the frame with which it is directly connected.

In the drawings, b^2 is the frame of the skate, consisting of a thin metallic bar of suitable width, having an extension upon one end reaching forward under the foot-plate A, the latter being properly secured thereto. The foot-plate is otherwise secured to the frame by a bracket, J, secured on each side of the frame and to said plate. The sole-clamps $i i$ are of a well-known construction, having their rear ends united by a single pivot-bolt, z , and the latter is tapped to receive the screw z^2 on one end of the link-nut y , the opposite end of the latter being tapped to receive the screwed end of the draw-bar c . Two shell-brackets, $a a$, are secured to the rear end of the frame b^2 , having the heel-plate B secured to their upper edges, whereby is formed a chamber under the latter to receive the trough-shaped shank of the heel-clamp b , as in my patent of

February 20, 1877. The forward end of the heel-plate is bent up at right angles to form the heel-abutment k . The draw-bar c , as in my said patent, passes through the rear part of the heel-clamp and between the sides of its shank under the heel-plate, and screws into the rear end of the link-nut y . In the drawings the screw on the draw-bar c is made right-handed, and that on the part z^2 , which is attached to the nut y , and which screws into the pivot z , is made left-handed. This arrangement of right and left handed screws for adjusting the clamps to the size of the boot-sole in the usual way facilitates said adjustment. The draw-bar c has a transverse slot through it near its rear end, of some length, as shown. A pin, e , passes through the rear portion of the heel-clamp and through the said slot in the draw-bar, thereby locking the clamp and draw-bar one to the other, but allowing the clamp to slide on the bar to the extent of the length of the said slot in the latter, and preventing the draw-bar from being rotated, as it has been heretofore in similar constructions.

The cam-lever f , as in my said patent, is pivoted to the end of the draw-bar, and is, as there described, adapted to be swung upward to carry its cam against the rear of the heel-clamp, forcing the latter against the boot-heel, and then, after having its upper end carried against the boot, so completing the locking of the skate by drawing bar c rearwardly and forcing the sole-clamps against the opposite edges of the sole. When the sole and heel clamps are to be adjusted to the size of the boot, nut y is operated to lengthen or shorten the connection through bar c , between the sole and heel clamps. In this adjustment the said bar and the heel-clamp move substantially together back and forth, and when the skate is placed on the boot and held by one hand, the cam-lever is seized by the other and turned upward, first striking the clamp b , and sliding it against the boot, and finally having its cam carried against it with increased force to lock it. By making a sliding connection between the heel-clamp and draw-bar, the necessity of moving each one separately in many of the adjustments is avoided, for when the bar is moved (the pin being against either end of the slot in the latter) the clamp moves with it. The

frame b^2 is made of sufficient thickness near each end to permit of boring two journal-post bearings in it quite through it from its lower to its upper edge. At the lower end of said bearing the frame is provided with a recess, as shown in Fig. 3, within which the journal d vibrates, the parts 3 3 of the frame being journal-stops. The said journal-bearings are bored at an incline of about fifteen degrees, and are of proper cylindrical form. The journal d is provided with a journal-post, n^3 , extending up through said bearing in the frame, and having its axial line intersecting that of the journal and of the axle m within the latter, at right angles. Beneath the journal d , under the post n^3 , and in a line with it, is a flat-sided stud, n , on the opposite sides of which two flat springs, v v , which are bolted to frame b^2 , are made to bear, and whereby the journal is held by a yielding force in a position at right angles to the frame, and also is held in its place in the latter, and is prevented from any disagreeable rattling. The sides of the frame where the springs v are secured to it are slightly recessed at w , as shown, and the springs, when bolted to the frame by the bolts x , have their upper edges brought against the upper edges of said recesses, and thereby the springs are rigidly held, and cannot swing downward when any force of the journal is brought against their ends. The journal-post n^3 has an oil-passage, n^2 , from its upper end to the axle-bearing in the journal d . The axle m passes through and may freely revolve in the journal d , and has secured to it in any suitable manner the rollers D . The journal and axle are lubricated by applying oil at the upper end of post n^3 , whence the oil flows to the journal-center and along the axle toward its ends and to the interior of the rollers D , affording them such lubrication as they may require.

It will be seen that the weight upon the skate is brought to bear on the upper side of each journal around the base of the post n^3 , and in order that there may be no friction at that point to interfere with the easy vibratory movement of the journals and axles a little oil is allowed to run down the sides of the post n^3 when oil is applied, as above described, thereby sufficiently oiling the post-bearing.

As above described, the degree of the incline of the journal-posts is about fifteen degrees, while that usually given in roller-skates is ordinarily twenty or twenty-five degrees more than that, and, as aforesaid, the axial lines of posts n^3 and the axles intersect. These last-named two features of this construction conduce to render the necessary vibratory movement of the journals and axles very easy to produce by a slight depression of one side of the skate, thereby making it very easy to skate thereon and easily guide it to any desired curve of motion. Furthermore, the manner of applying the spring force to the journals, as above described, is one in which very great ease of

spring motion is the result, as well as an increasing force at all points in the vibratory path after the journal begins to swing.

What I claim as my invention is—

1. A roller-skate frame, substantially as described, having therein inclined cylindrical journal-bearings, one at each end, an axle-journal, substantially as described, for each of said bearings, having a journal-post fitting said bearings, and having on its side opposite to said post a flat-sided stud, and springs, substantially as described, secured to the frame, which bear upon the opposite sides of said stud under the journal, combined and operating substantially as set forth.

2. In a roller-skate, the frame b^2 , having the journal d pivoted and adapted to vibrate therein, and having portions 3 3 thereof extending in the front and rear of said journal to constitute axle-stops, substantially as set forth.

3. A roller-skate frame, substantially as described, having therein inclined cylindrical journal-bearings, one at each end, an axle-journal, substantially as described, for each of said bearings, having a journal-post fitting the latter, which post is provided with an oil-passage from its upper end to the interior of the journal, and having on its opposite side to said post a flat-sided stud, and springs, substantially as described, secured to the frame, which extend under the journal and bear against the opposite sides of said stud, combined and operating substantially as set forth.

4. A roller-skate frame, substantially as described, having an inclined cylindrical journal-bearing therein, a journal to receive and support that part of the axle between the rollers having a post thereon to fit said bearing, whose axial line intersects the longitudinal center line of the journal, and a flat-sided stud thereon opposite said post, and two springs secured on each side of the frame and bearing against the opposite sides of said stud, combined and operating substantially as set forth.

5. In a skate-fastening, the combination, with a non-rotating draw-bar, and with the sole-clamp pivot, of an adjusting-screw, substantially as described, connecting the said pivot and draw-bar, a heel-clamp secured to and having a sliding movement on the draw-bar, and a locking cam-lever pivoted to the latter in the rear of the heel-clamp, substantially as set forth.

6. The combination, with a non-rotating draw-bar, and with a locking cam-lever pivoted thereto, of a heel-clamp secured to said draw-bar by means substantially as described, but having a sliding movement thereon, substantially as set forth.

EVERETT H. BARNEY.

Witnesses:

H. A. CHAPIN,
J. D. GARFIELD.

(No Model.)

2 Sheets—Sheet 1.

E. H. BARNEY.
ROLLER SKATE.

No. 293,299.

Patented Feb. 12, 1884.

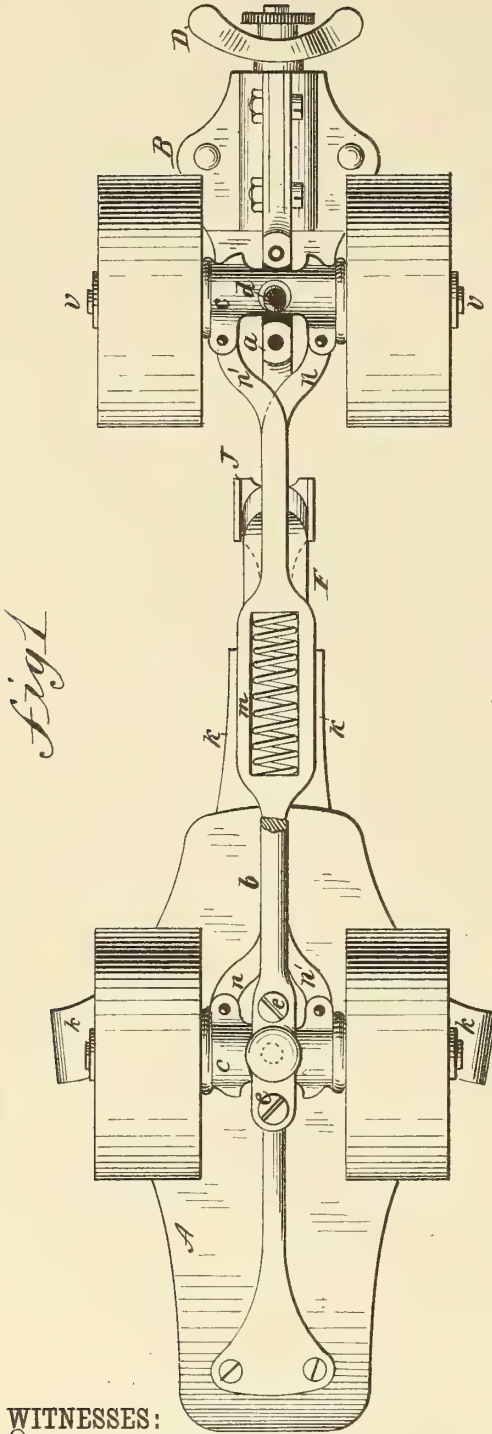
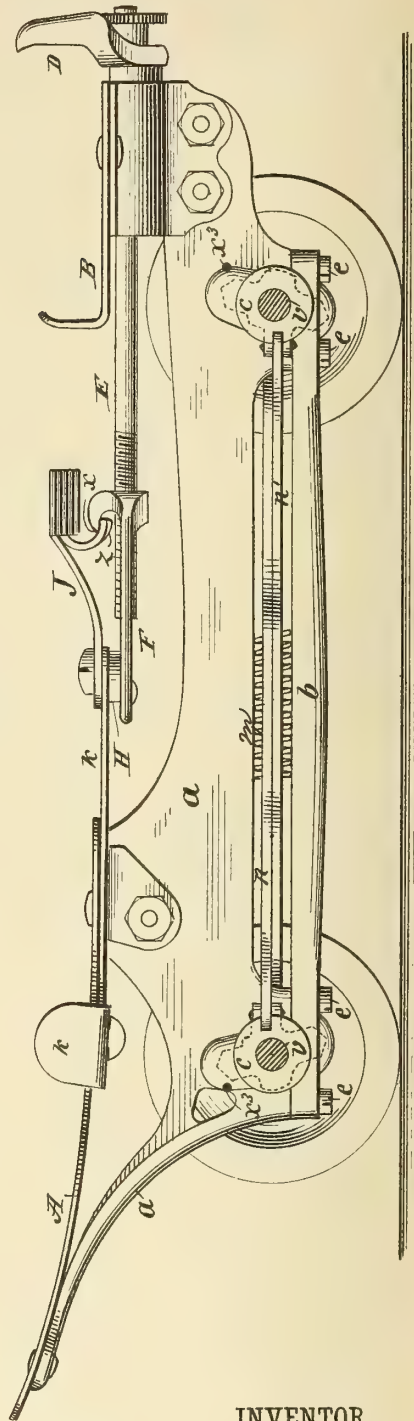


Fig 2



WITNESSES:

J. D. Garfield
M. C. Buck

INVENTOR

Everett H. Barney
BY *Henry A. Chapin*

ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

E. H. BARNEY.
ROLLER SKATE.

No. 293,299.

Patented Feb. 12, 1884.

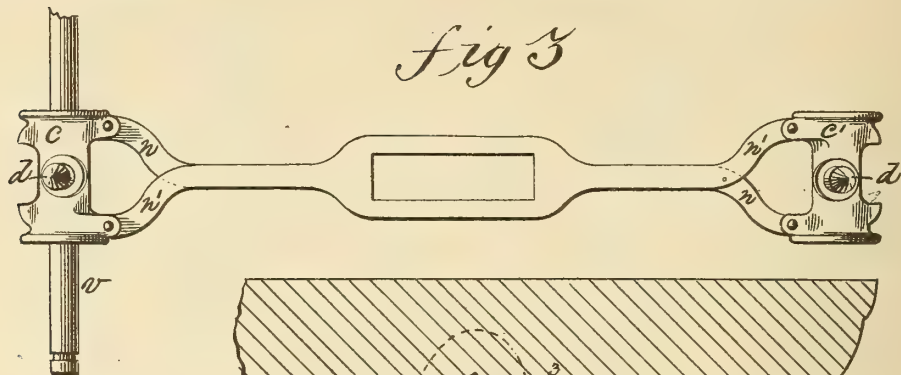


fig 4

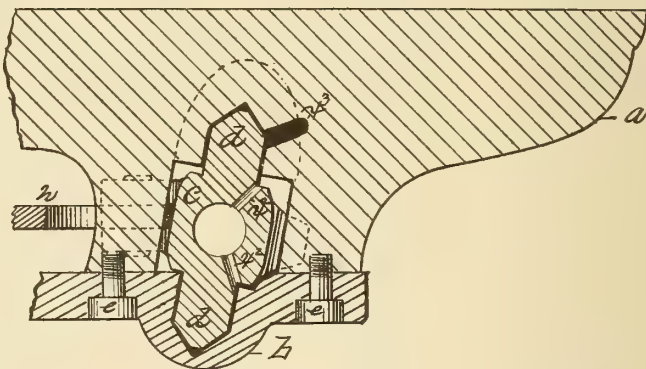
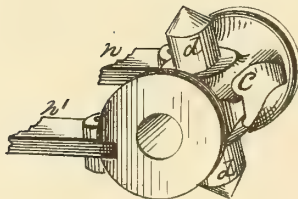


fig 5



fig 6



WITNESSES:

J. D. Garfield
M. C. Buck

INVENTOR

Everett H. Barney
BY *Henry A. Chapin*

ATTORNEY

UNITED STATES PATENT OFFICE.

EVERETT H. BARNEY, OF SPRINGFIELD, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 293,299, dated February 12, 1884.

*Application filed December 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, EVERETT H. BARNEY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

This invention relates to improvements in the construction of roller-skates; and it consists in improved means for supporting the axles of such skates and for controlling their oscillatory movements, the object being to provide for this class of skates such a construction of axle-supports that the axles and rollers are free to rotate together or independently of each other; to provide improved axle-connections, whereby the axles and rollers are made more sensitive to the deflection of one edge of the foot-support, and made quickly to resume their parallel positions when said support is brought to a level, thereby providing a roller-skate with which the skater can with great facility turn quickly and easily either upon both axles or one, and which possesses such solid elements of construction as conduce to great durability and prevent frequent breakage.

In the drawings forming part of this specification, Figure 1 is a plan view, partly in section, and Fig. 2 is a side elevation showing two rollers removed, of a roller-skate embodying my improvements. Figs. 3, 4, 5, and 6 are detail views.

The construction and operation of the metal-skate parts—consisting of the sole-plate A, the heel-plate B, heel-clamp D, screw-rod E, link F, crank-stud H, lever J, and the sole-clamps K K—are substantially those shown and described in my United States Patent No. 274,254, of March 20, 1883, to which reference may be had, excepting the means herein shown and described for securing the lever J in a locked position, and which consist of a hook *x*, formed on the rear end of the link F, bending toward the crank-stud H, or the pivot of lever J. Said lever is provided with a curved lip, *z*, under its rear end, having a central depression in it, in which the point of hook *x* catches when lever J is swung to the position shown in Fig. 2; and when brought to that position its free end is sprung down a little to slip the higher side of

said lip under the hook. The lever then springs up, causing said depression in the lip to be held up against the under side of the hook, thereby keeping the lever from being jarred or shaken out of place as the skate rolls over the floor.

The lever and hook above referred to are shown in detached positions in Fig. 5, the lever there being shown in end view, whereby the form of the lip *z* is clearly seen.

The above-named metal-skate parts are mounted on a metal frame, *a*, much in the manner in which they are secured to the runner of an ice-skate, and the upper portion of said frame is similar in form to such a runner; but its lower edge is adapted to have the requisite roller-skate parts attached thereto, as hereinafter described.

The front and rear axles, *v*, are supported in two axle-cases, *c c*, which are substantially alike, and each one is perforated longitudinally to let an axle pass through and rotate in it. The axle-case *c* is provided with pivots *d* on opposite sides thereof, and with ears on one side, to which are pivoted the ends of two connecting-bars, *n n'*.

The frame *a* has an opening made in its lower edge near each end, of rectangular form, and a socket is made in the frame in the upper side of said opening, of proper shape to receive one of the pivots *d* on the axle-case. That part of frame *a* in which said socket is made is made slightly thicker than it is elsewhere, to provide therefor. A strap, *b*, is secured to the lower edge of frame *a* by the screws *e e*, and those portions of the strap which are opposite said openings in frame *a* are provided with sockets nearly opposite to those in the frame, to receive the pivots *d* of the cases *c*, which are on the under sides of the latter. Thus the said axle-cases are supported on the pivots *d*, within rectangular openings in the lower edge of frame *a*, and are free to have a certain oscillating or vibratory motion therein. The axial lines of the pivots *d* in both the front and rear axle-cases run at an incline to each other, separating as they extend upward, as shown in Figs. 2 and 4.

In Fig. 4 is shown a longitudinal sectional view of the rear end of frame *a*, together with the rear axle-case and strap *b*. Said figure is

enlarged to more clearly show the construction of the parts and the means for lubricating the pivots and axle-bearings. An oil-hole, x^3 , leading from the surface of frame a , serves to convey oil to the pivot-socket and pivot in the frame, whence it runs downward through passages x^2 to the axle-bearing, and thence to the socket of the lower pivot d in the strap b . Thus the bearing-points of the case c in the frame and the axle-bearing in the case are conveniently and suitably lubricated, and more or less oil finds its way along the axles to the rollers; but in this way of hanging the axles it is not material that the rollers themselves be lubricated much, if any, and thereby the danger of soiling garments by contact with the rollers is removed.

The axle-cases c are connected one to the other by the connections $n n'$, the ends of which are pivotally secured to the above-mentioned ears on the cases. Said connections are attached near the ends of the cases, and lie one against the other between the strap b and the lower edge of the frame a . A rectangular opening is made through each connection $n n'$, of corresponding dimensions, and so arranged that when the axle-cases stand parallel to each other and at right angles to the frame said openings are exactly opposite each other, as shown in Fig. 3. The spring m , made of strong spring-wire, is compressed and forced into the opening in the said connections, and therefore the force of its expansion is exerted against the ends of said opening and equally against each connection, thereby presenting a spring resistance against a sliding movement of the connections in opposite directions, and through the latter against the vibrations of the axle-cases and axles, and furnishing a constantly acting power to (in combination with said connections) swing the axles to a position at right angles to the frame. The manner of attaching the connections $n n'$ and axle-cases to each other is shown in Fig. 3.

The operation of the skate is as follows: The devices for adjusting and fastening the skate to the boot are such as are described in my said patent. When the skater desires to turn from a right line, he bears harder upon one side of the skate, and, by reason of the inclined position of the pivots of the axle-cases throwing the weight onto one side of the skate, causes the cases and axles to vibrate under

the frame and bring the axes of the axles to positions representing diverging radial lines of the circle in which the skate is moving, the connections $n n'$ compelling both axles to vibrate simultaneously. As soon as the side pressure on the skate is removed, spring m forces both axles back to a parallel position.

In this skate it is not necessary that the skater keep both the front and rear rollers on the floor when he would move in a circle, but he may bear his weight entirely on one axle, and operating as before, the skate will move in a circular line.

The parts of the frame which constitute the front and rear edges of the openings in which the axle-cases vibrate are brought near enough to the sides of the latter to constitute efficient and firm stops, against which the cases strike to limit the swing of the axles, and since the opposite sides of the case strike said stops, there is not such a strain brought upon the pivots d as makes them or other parts likely to break.

What I claim as my invention is—

1. In a roller-skate, a frame, substantially as described, to support the fastening devices thereof, two axles and rollers therefor, two axle-cases pivoted to vibrate in said frame in a horizontal plane whose vibratory axes stand at an incline to each other, two connections pivoted to and uniting said axle-cases, and a spring to act through said connections upon both axle-cases simultaneously, combined and operating substantially as set forth.

2. In a roller-skate, the frame a and the strap b , each provided with a corresponding pivot-socket, the axle-case c , having pivots $d d$ to fit said sockets, and a suitable axle and rollers, combined and operating substantially as set forth.

3. In a roller-skate, the frame a and the strap b , each provided with corresponding pivot-sockets, two axle-cases c , each having pivots $d d$ to fit said sockets, the connections $n n'$, the spring m , and suitable axles and rollers, combined and operating substantially as set forth.

4. The lever J , having the lip z thereon, and the link F , having the hook x , combined and operating substantially as set forth.

EVERETT H. BARNEY.

Witnesses:

H. A. CHAPIN,
J. D. GARFIELD.

(No Model.)

L. L. RYERSON.

ROLLER SKATE.

No. 294,082.

Patented Feb. 26, 1884.

Fig. 1.

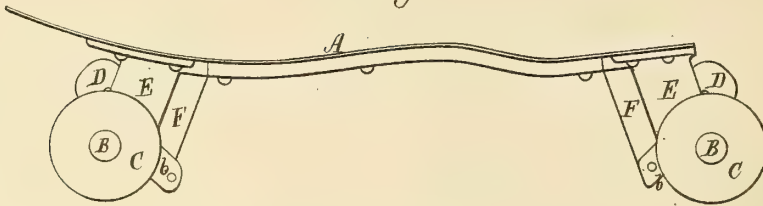


Fig. 2.

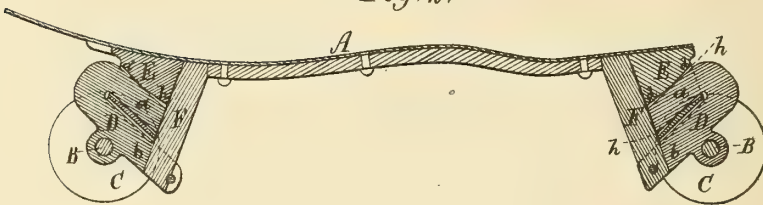


Fig. 3.

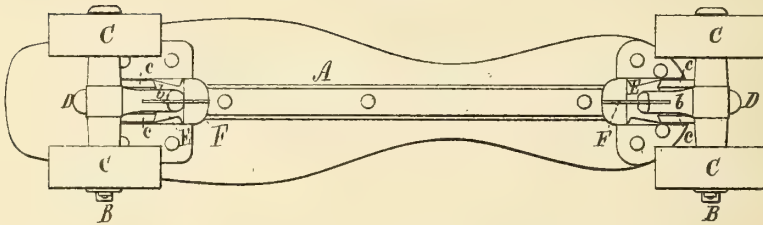
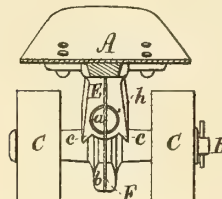


Fig. 4.



Witnesses
S. N. Piper
E. B. Pratt

Inventor.
Lucius Lorenzo Ryerson.
by *R. H. Lee* atty.

UNITED STATES PATENT OFFICE.

LUCIUS LORENZO RYERSON, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 294,082, dated February 26, 1884.

Application filed November 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, LUCIUS LORENZO RYERSON, of Boston, in the county of Suffolk, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Roller-Skates; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

10 Figure 1 is a side view, Fig. 2 a longitudinal section, Fig. 3 a bottom view, and Fig. 4 a transverse section, of a roller-skate provided with my invention, the nature of which is defined in the claims hereinafter presented.

15 In said drawings, A denotes the shoe-support, B B the axles, and C C C C the four wheels, of a roller-skate in their usual arrangement with each other. At its middle each axle is attached to one of two inclined
20 "goose-necks," D D, each of which has a cylindrical journal, *a*, to enter and turn in one of two bearings, E E, fastened to and projecting downward from the plate A, they being arranged therewith as represented. Each goose-
25 neck extends in opposite directions beyond its journal, and is connected to the bearing E by a metallic spring, F, going from one to the other, and arranged with them in manner as shown.

30 The lower limb, *b*, of the goose-neck is between two stops or lips, *c c*, extending from the bearing E, such bearing between the stops being curved, to admit of the limb vibrating from one to the other of them, it, by the spring, being brought to its median position with respect to them. The journal-receiving hole *h*
35 in the bearing is smallest in diameter at its middle, and from thence is conical in each di-

rection therefrom, as shown at *d d*, such being to allow of the axle having a slight vibratory movement, as well as a pendulous one, under the plate. While the spring allows of the axle having such movements to facilitate the operations of a skater and enable him, while skating, to keep the wheels in contact with the floor, it serves to restore the parts to their normal positions as circumstances may require.

In my improvement the spring, besides its other duties, operates to connect the goose-neck to the bearing, and to maintain them in their due relations with each other.

My improvement renders unnecessary any rubber cushions or springs, as usually applied, for supporting the wheel-axle.

In the roller-skate, I claim—

1. The wheel-axle goose-neck and its journal-bearing, provided with the metallic spring connected to and arranged with them substantially as set forth.

2. The wheel-axle goose-neck journal-bearing provided with the lips or lateral stops, in combination with the said goose-neck, and with the spring connecting it with the said bearing and arranged therewith as represented.

3. The goose-neck bearing having the duplex conical bore, as and arranged in it as set forth, in combination with the goose-neck connected to such bearing by a metallic spring arranged as represented, and provided with a cylindrical journal to work in the bearing, as specified.

LUCIUS LORENZO RYERSON.

Witnesses:

R. H. EDDY,
E. B. PRATT.

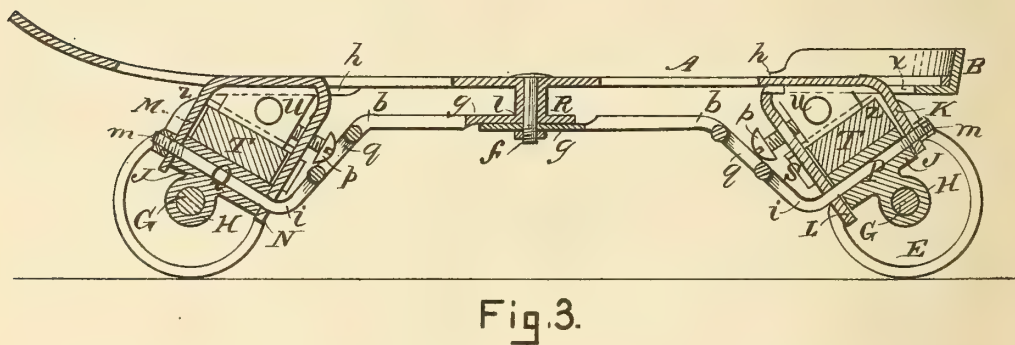
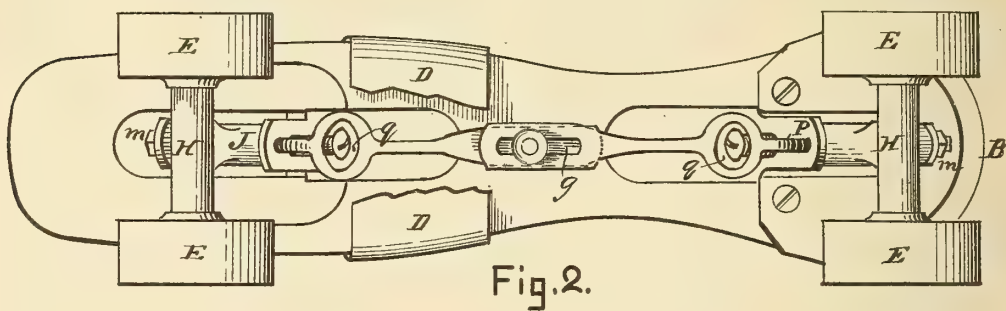
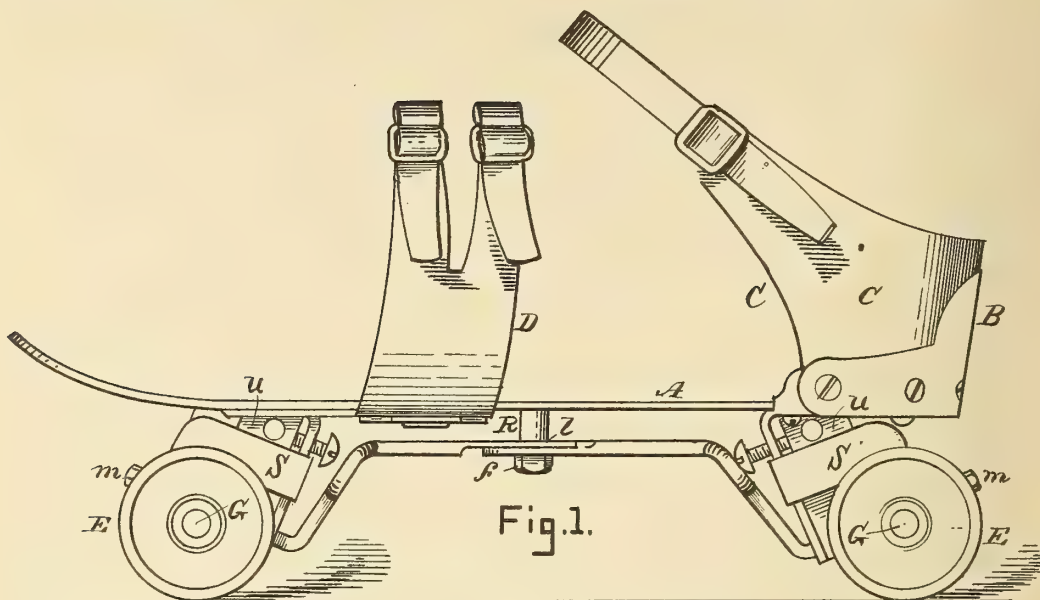
(No Model.)

S. W. ALWARD.

ROLLER SKATE.

No. 294,426.

Patented Mar. 4, 1884.



Witnesses.
H. C. Krumpholtz
L. J. White

Inventor.
Samuel W. Alward,
Per C. A. Shaw,
Att'y.

UNITED STATES PATENT OFFICE.

SAMUEL W. ALWARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO LEONARD G. ABBOTT, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 294,426, dated March 4, 1884.

Application filed October 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. ALWARD, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Roller-Skates, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a skate embodying my improvement; Fig. 2, a bottom plan view of the same, and Fig. 3 a vertical longitudinal section.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to the class of skates known as "roller-skates;" and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more effective and desirable article of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body of the skate; B, the heel-iron; C, the ankle-strap; D, the foot-strap; E, the trucks or rollers; G, the axle; H, the axle-bar, and J the rocker. These parts, being all old and well known, are therefore not claimed herein when in and of themselves considered.

The body of the skate is provided, in the usual manner, with a short flange, K, and long flange L, projecting downwardly at the heel, and with corresponding flanges, M N, at the toe, the flanges being respectively inclined to the plane of the body, and the members of each pair arranged in parallelism, as best seen in Fig. 3. A pin, P, secured by the nut *m*, passes through the outer ends of the heel-flanges K L, the rocker J for the rear pair of trucks being journaled thereon. A corresponding pin, Q, secured by the nut *n*, passes through the outer ends of the toe-flanges M N, on which

the rocker for the forward pair of trucks is journaled. A stud, R, provided with a shoulder, *l*, and nut *f*, projects downwardly from the center of the body A. The pin P is elongated and bent, as shown at *i b*, its inner end being flattened and provided with a slot, *g*, through which the outer end of the stud R passes, the pin Q being constructed and connected with said stud in substantially the same manner, these elongated pins serving not only as journals for the rockers J, but, when their inner ends are secured to the stud R by the nut *f*, as a brace or truss to strengthen the body of the skate.

Arranged to slide freely between the flanges K L there is a box or holder, S, carrying an elastic cushion or piece of rubber, T; and disposed beneath this box, and fitted to slide in a groove, *h*, in the body A, and in a groove, *z*, in the bottom of the box S, there is a V-shaped piece of metal or wedge, U, provided with a screw, *p*, which is fitted to work in the long flange L. The toe-flanges M N are provided with a corresponding box, S, rubber cushion T, wedge U, and screw *p*. The upper side of the rocker J, or that portion of the same which comes into contact with the rubber T, is flat, the outer face of the rubber adjoining the rocker being also flat.

In skates of this character which are provided with rockers and elastic cushions, substantially as described, much difficulty is experienced in taking up or compensating for the wear of the cushions, and also in readily changing the pressure on the rocker to keep the body of the skate in proper position with respect to the axle and trucks, when it is used by different persons, a heavy person requiring more tension or pressure on the rubber than a light one. This objection is entirely obviated by the sliding box S, wedge U, and screw *p*, by means of which any required degree of pressure may be exerted on the rubber cushion T, the screw being turned in to force it against the under side of the rocker, and thereby compensate for the wear of the cushion, and in or out, as the case may be, to adjust this part of the skate for persons of different weight, as described. The elongated ends of the pins P Q are flattened opposite the

screws *p*, and provided with holes *q*, through which said screw may be readily inserted without interfering with said pins.

I do not confine myself to elongating the pins *P Q*, as described, to form a truss, as this feature may be omitted, or a truss of a different construction used. Neither do I confine myself to the use of the sliding box *S* and wedge *U* with skates having a metallic body, either with or without a truss, as they are equally well adapted to skates having wooden bodies, a proper bracket or holder for these parts and the rocker being attached to the bottom of the wood. Neither do I confine myself to making the cushion *T* of a single piece of rubber, as it may be made of sheets, or in several pieces, nor to constructing the part *S* for the rubber in the form of a box, as a slide or follower working between the rocker *J* and wedge *U* will perform substantially the same functions, although I deem a box preferable, as it prevents the undue expansion of the rubber laterally and improves the appearance of the skate by concealing the cushions.

Having thus explained my invention, what I claim is—

1. In a roller-skate, the sliding box *S*, pro-

vided with the elastic cushion *T*, in combination with the rocker *J* and means for forcing said cushion against the rocker, substantially as set forth.

2. In a roller-skate, the combination of the following instrumentalities, to wit: a pair of trucks, an axle for the trucks, a journaled rocker, a rubber cushion, a box or slide for the cushion, a wedge, proper ways for the slide and wedge, and a screw, the screw being adapted to force the box or slides against the cushion and the cushion against the rocker, substantially as and for the purpose set forth.

3. In a roller-skate, the trucks *E*, axle *G*, bar *H*, rocker *J*, pin *P*, cushion *T*, box *S*, wedge *U*, screw *p*, and flanges *K L*, constructed, combined, and arranged to operate substantially as specified.

4. In a roller-skate, the pins *P Q*, respectively provided with the holes *q*, for inserting and removing the screws *p*, substantially as specified.

SAMUEL W. ALWARD.

Witnesses:

C. A. SHAW,
L. J. WHITE.

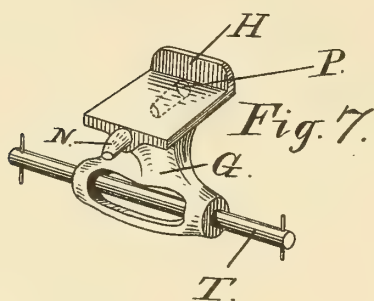
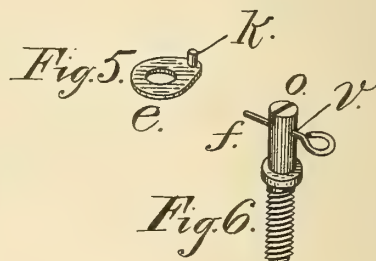
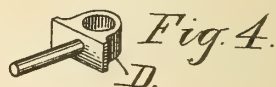
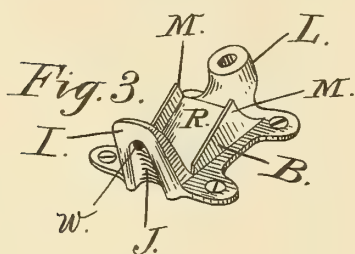
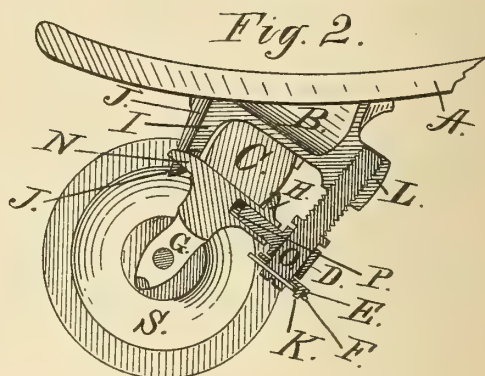
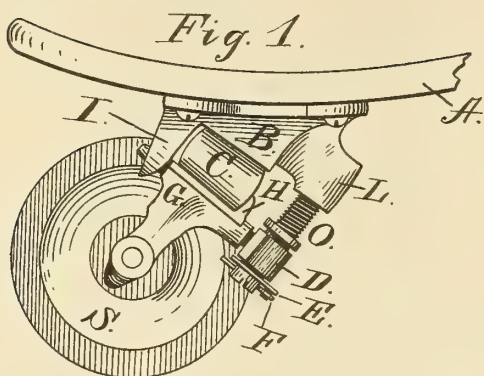
(No Model.)

J. V. ROWLETT.

ROLLER SKATE.

No. 296,358.

Patented Apr. 8, 1884.



Witnesses.
Aldison H. Study.
Clarence Westfall

Inventor.
Jacob V. Rowlett

UNITED STATES PATENT OFFICE.

JACOB V. ROWLETT, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 296,358, dated April 8, 1884.

Application filed March 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, JACOB V. ROWLETT, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class known as "roller-skates," and has for its object strength, durability, cheapness, lightness, and efficiency. The device used enables the skater to adjust at will the tension on the elastic spring, which tension is produced by the adjustment of the post, by which, together with an eye-pivot secured by pin and washer, the truck-hanger is attached to the bracket, which is fastened to the foot-piece. The hanger may be removed by the skater by simply withdrawing the pin without taking the skate from the foot. The washer surrounding post has a lug to secure pin, as shown, or a hole into which a pin may pass, or any other method of holding the same, though I prefer the lug. Other devices might be used in the place of the pin and washer that would answer the same purpose; but I prefer the pin and washer.

In the accompanying drawings, Figure 1 represents a side elevation of the front part of a roller-skate, with my improvements applied thereto. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is an inverted plan of the bracket attached to the foot-piece. Fig. 4 is the eye-pivot. Fig. 5 is the washer with lug used in conjunction with the pin. Fig. 6 is the adjustable post, with pin inserted near the outer end. Fig. 7 is the hanger to which the rollers are attached, and also having a flange or rib on its upper surface.

Similar letters of reference indicate corresponding parts.

A represents the foot-piece of a skate, as shown in Figs. 1 and 2.

B represents the metal bracket, as shown in Figs. 1, 2, and 3.

I represents the post, as shown in Figs. 1, 2, and 3.

L represents a support, as shown in Figs. 1, 2, and 3.

O represents the adjustable post, as shown in Figs. 1, 2, 3, and 6.

R represents the seat or under face of bracket B, as shown in Fig. 3.

M M represent the flanges on bracket B, as shown in Fig. 3.

D represents the eye-pivot, as shown in Figs. 1, 2, and 4.

E represents the washer, as shown in Figs. 1 and 2, and more fully in Fig. 5.

K represents the lug on washer E, as shown in Figs. 2 and 5.

F represents the pin, as shown in Figs. 1, 2, and 6.

G represents the hanger, as shown in Figs. 1, 2, and 3.

N represents the pivot, as shown on hanger G in Figs. 2 and 3.

P represents the opening, as shown in Fig. 2, and dotted in Fig. 7.

S represents the rollers, as shown in Figs. 1 and 2.

T represents the axle, as shown in Fig. 7.

H represents the flange, as shown in Figs. 1, 2, and 7.

C represents the elastic spring, as shown in Figs. 1, 2.

V represents the hole in which pin F is inserted, as shown in Fig. 6.

J J represent the grooves in post I, as shown in Figs. 2 and 3.

W represents the hole in post I, as shown in Fig. 6.

The bracket B is constructed with post I, provided with grooves J J, passing each other, so as to form in the sand the hole W, for the reception of the pivot N of hanger G. It also has the form L, to receive the post O. The under face, R, is provided with flanges M M, forming part of the seat for the elastic spring C.

The hanger G is provided with flange H, completing the seat for the elastic spring C, when said hanger is adjusted, as shown in Figs. 1 and 2. The hanger G is also provided with pivot N, to be inserted and rest in hole W in post I. The hanger G is further provided with opening or socket P to insert the pinnal bearing of eye-pivot D.

The eye-pivot D is provided with a pinnal bearing on its outer surface running at right angles with the eye or hole, so that when placed on the post O, and inserted in the opening or socket P in the hanger G, it will make a per-

fect bearing, and also allow the hanger G to have a rocking motion.

The washer E is provided with the lug K, to hold in place the pin F when inserted through the post O. By this mode of fastening the eye-pivot to the post O it permits the post of being adjusted into or out from the bracket B, thereby pressing the hanger G against the elastic spring, causing the rocking or tilting motion to be more rigid or flexible, as the operator may desire.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The adjustable post O, in combination with the bracket B, eye-pivot D, and pin F, substantially as set forth.

2. The adjustable post O, in combination with bracket B, eye-pivot D, pin F, and washer E, with lug K, holding the pin in position, substantially as set forth.

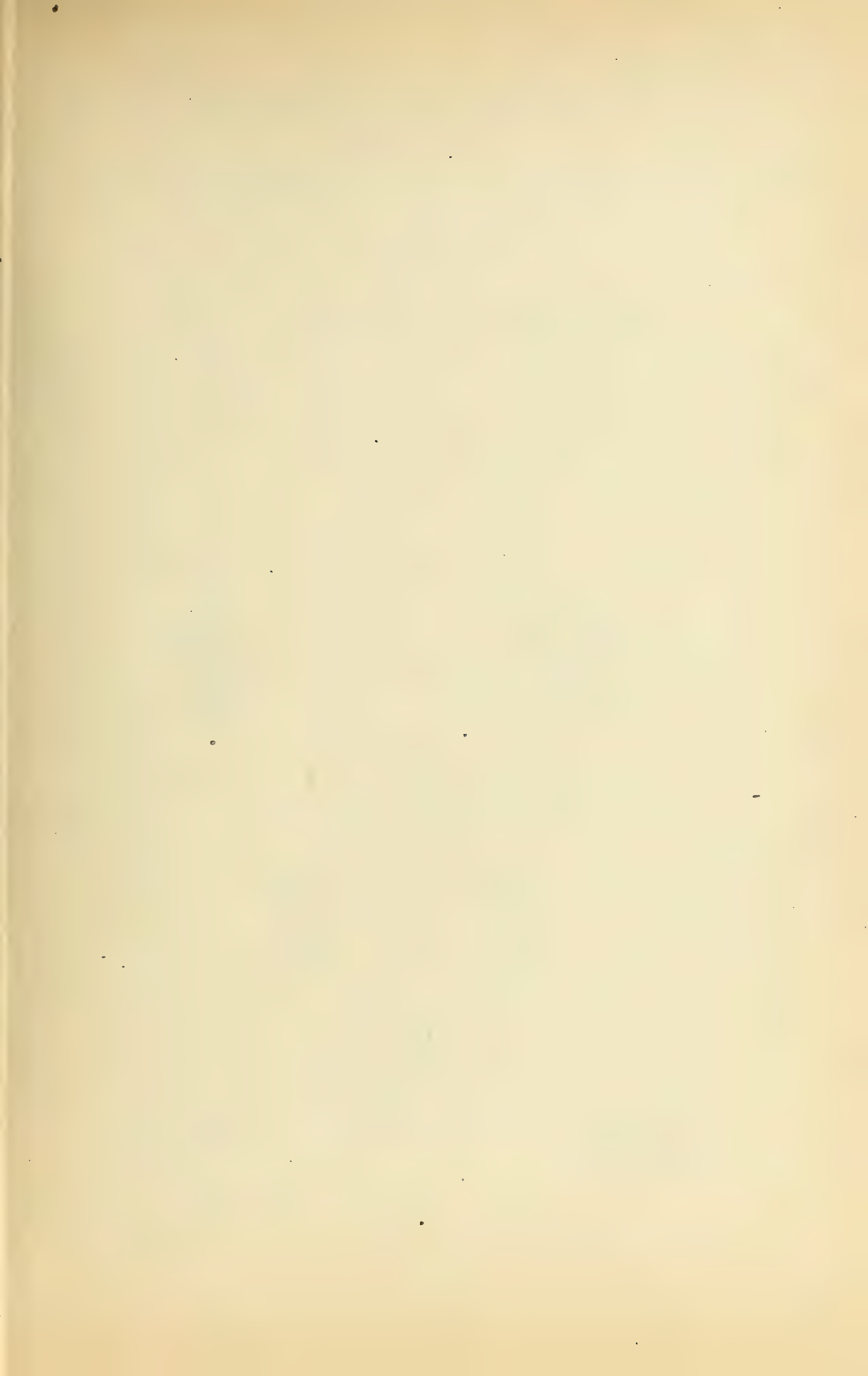
3. In a roller-skate, the combination of the foot-piece A, the bracket B, having post I, and adjustable post O, and flanges M M, with hanger G, having flange H, the elastic spring C, pivot N, eye-pivot D, washer E, having lug K, and pin F, all constructed substantially as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JACOB V. ROWLETT.

Witnesses:

WM. W. RATHAY,
ALVIN E. CROCKER.



(No Model.)

C. HUCKINS & G. N. PARKER.

ROLLER SKATE.

No. 296,571.

Patented Apr. 8, 1884.

FIG. 1.

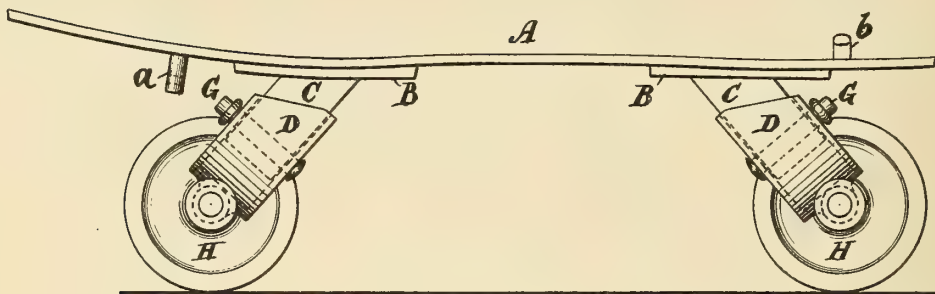


FIG. 2.

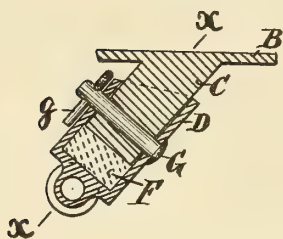


FIG. 3.

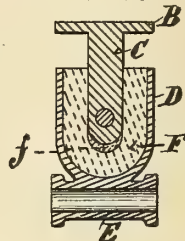


FIG. 4.

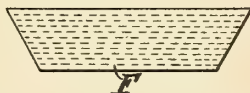


FIG. 5.

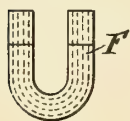
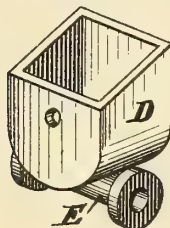


FIG. 6.



FIG. 7.



Witnesses.

L. Blanta.
H. E. Morse.

Inventors.

C. H. Huckins
G. N. Parker
by J. H. Adams
Atty

UNITED STATES PATENT OFFICE.

CHARLES HUCKINS AND GEORGE N. PARKER, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 296,571, dated April 8, 1884.

Application filed June 25, 1883. (No model.)

To all whom it may concern:

Be it known that we, CHARLES HUCKINS and GEORGE N. PARKER, citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification.

In the use of roller-skates it is very essential that a spring or yielding material be placed between the plate or stock that supports the foot and the bearings of the rollers, in order to admit of a lateral yielding of the said plate or stock while in use. For this purpose india-rubber has been mostly employed; but a great objection to this consists in its liability to become smeared with the oil used to lubricate the bearings of the roller-axles, thus rendering the rubber useless, and necessitating its removal and substitution of a new piece of rubber before it is worn out.

It is the object of our invention to obviate this objection; and to that end the invention consists in confining the rubber in a socket or casing, so as to prevent any liability of the oil coming in contact with the rubber, and at the same time admitting of a more advantageous yielding lateral movement of the skate plate or stock.

Referring to the accompanying drawings, Figure 1 is a side elevation of a roller-skate embodying our improvement. Fig. 2 is a vertical section of the hanger with our socket and the inclosed rubber. Fig. 3 is a section on the line *xx* of Fig. 2. Figs. 4, 5, and 6 represent the rubber used in our socket or case; and Fig. 7 is the metal socket or casing.

A, Fig. 1, is the foot-support consisting of a metal plate.

B B are re-enforce plates on the under side of the plate A, and C C are the hangers.

a is a stud, of which there are two, to which the toe-clamps are attached; and *b* is a stud or catch which enters a slot in a plate attached to the boot or shoe of the skater, for securing the skate to the heel of the shoe.

When the foot-piece A is of metal plate, the said parts may be cast or made all in one piece; but when the foot-piece is of wood, the plate B is secured by screws or rivets to the under side of said foot-piece.

D is a socket or casing of the form shown in

Fig. 7, and F is a strip of india-rubber cut out or molded in the form shown in Fig. 4. The rubber F is bent, as shown in Fig. 5, and inserted in the socket D, and the hanger C is placed in the fold of the rubber, as shown in Fig. 3, when it is secured by a bolt, G, passing through a hole near the end of the hanger, and through the sides of the socket D, and held by a split pin, *g*, or otherwise secured.

To the lower end of the socket D is attached the bearing E, through which the axles of the rollers pass.

By means of the above-described construction we secure the most efficacious and desirable lateral yielding motion for the skate on the foot.

Should it be desirable to increase the degree of flexibility of the yielding device, we place an additional piece of rubber, *f*, in the bend of the rubber F, as seen in Fig. 3. This is to enable the skater to make a shorter turn on the skates when practicing "fancy" skating.

In case it becomes necessary to remove the rubber F and replace it by another piece, we have only to take out the pin *g*, when the socket D is readily removed.

By casting or making the plate A, the re-enforce B B, the hanger C, and stud *a* all in one piece we do away with all rivets on the plate, and thus present a smooth even surface.

What we claim as our invention is—

1. In a roller-skate, the socket or casing D, open only at the top, and containing the elastic material F, in combination with the hanger C and foot-plate A, substantially as and for the purpose set forth.

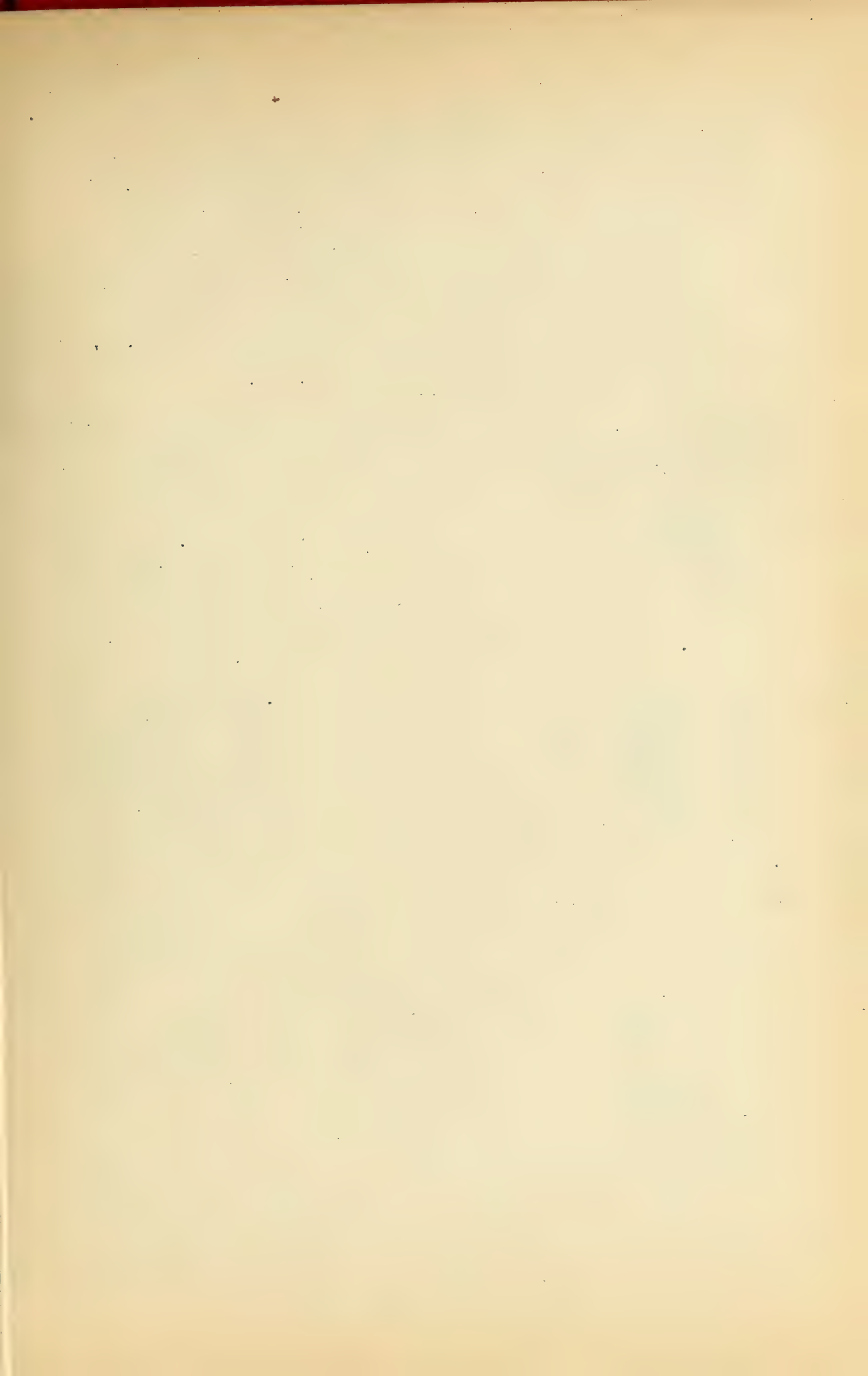
2. The combination of the foot-plate A, the plate B, hanger C, socket D, and inclosed elastic material F, secured to the hanger by a bolt, G, and the axle-bearing E, forming a part of the socket F, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES HUCKINS.
GEORGE N. PARKER.

Witnesses:

J. H. ADAMS,
E. PLANTA.



(No Model.)

M. F. HANLON.

ROLLER SKATE.

No. 296,833.

Patented Apr. 15, 1884.

Fig. 1.

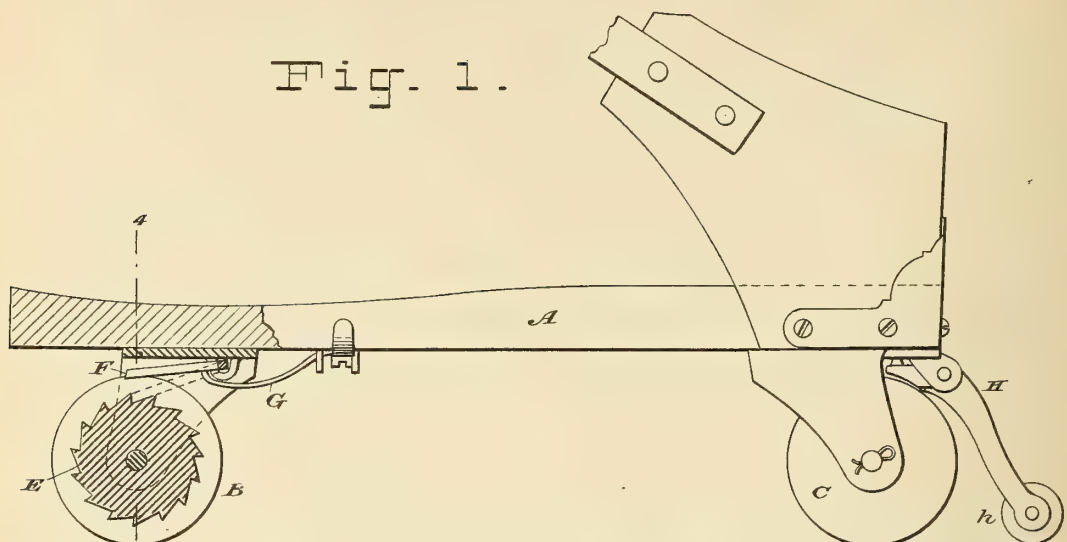


Fig. 2.

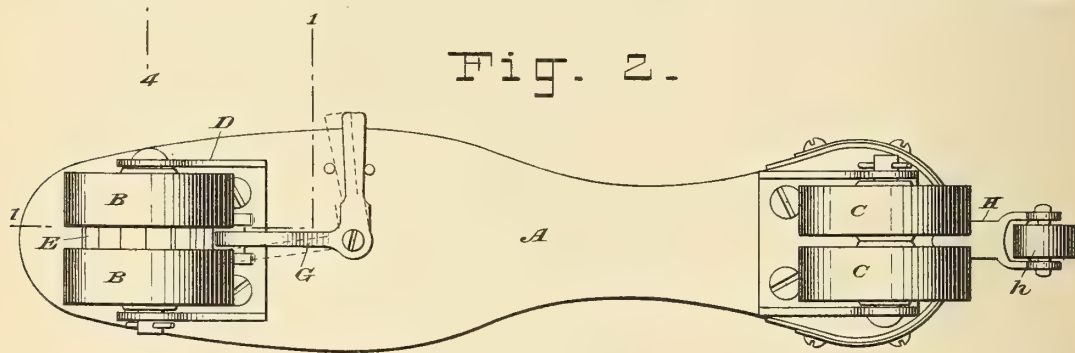


Fig. 3.

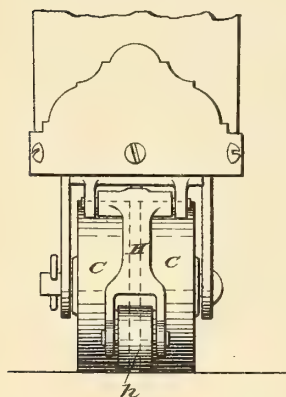


Fig. 4.

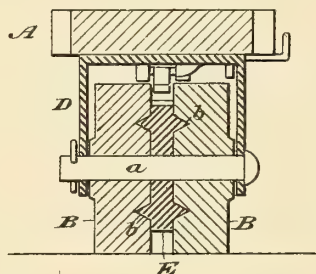


Fig. 5.

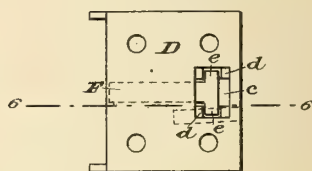
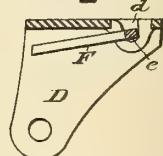


Fig. 6.



WITNESSES:

E. B. Bolton
Geo. S. Barton

INVENTOR:

Michael F. Hanlon
By his Attorneys,
Burke, Fraser & Bennett

UNITED STATES PATENT OFFICE.

MICHAEL F. HANLON, OF BROOKLYN, NEW YORK.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 296,833, dated April 15, 1884.

Application filed January 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL F. HANLON, a citizen of the United States, residing at Brooklyn, in the State of New York, have invented certain Improvements in Roller-Skates, of which the following is a specification.

My invention relates to any of the well-known types of roller-skates, whether the rollers or wheels are arranged in pairs at toe and heel or in line; and it consists, first, in the application of a ratchet-wheel and pawl to the front roller or rollers of the skate, to prevent the backward rotation thereof, the pawl being hung beneath the foot-plate of the skate; second, in the particular construction and adaptation of the ratchet-wheel and pawl; and, third, in means for throwing the pawl out of gear with the ratchet, all as will be fully herein-after set forth.

The accompanying drawings show my invention as applied to a skate having four rollers—two mounted side by side at the toe and two at the heel.

Figure 1 is a side elevation of the skate, partly in section, cut along the line 1 1 in Fig. 2. Fig. 2 is an inverted plan. Fig. 3 is a rear elevation. Fig. 4 is a vertical transverse section in the plane of the line 4 4 in Fig. 1. Fig. 5 is a plan of the bearing-bracket for the front rollers removed, and Fig. 6 is a section thereof cut along the line 6 6 in Fig. 5.

Let A designate the body or foot-plate of the skate, B B the front rollers, and C C the rear rollers. The rollers B B are both mounted on one axle, *a*, Fig. 4, which is held in a bearing-bracket, D. (Shown in Figs. 1, 2, and 5.)

Between the rollers B B is fixed a ratchet-wheel, E, which has spurs *b b*, which are pressed into the wood of the rollers. It may be united thus to both rollers, as shown, or only to one, as preferred.

The bearing-bracket D is formed with a hole, *c*, and two depressions, *d d*, in its base-plate, as best shown in Figs. 5 and 6, and to it is loosely pivoted a gravity-pawl, F, the pivoted end of which is formed with wings or ears *e e*, which enter the indentations *d d*. When the bearing-bracket D is screwed to the body A of the skate, the pawl is thus loosely pivoted beneath it. The end of the pawl drops against the ratchet-wheel E, and thus

prevents any backward rotation thereof. The skater is thus enabled to strike out with more freedom and certainty than heretofore, and it is no longer necessary to strike out laterally, as one may propel himself by pushing backwardly with one foot while skating on the other. The pawl in my invention is arranged directly beneath the foot-plate of the skate, and engages a ratchet attached to the front roller or rollers usually employed. As compared with those skates previously made wherein an extra propelling-roller is provided mounted on a bracket projecting forward from the toe of the skate, and provided with a gravity-pawl, my skate is a marked improvement, as no extra rollers are added. The usual front rollers are made to serve the purpose of a propelling-roller, and the skate is not rendered clumsy to use or awkward in appearance. When it is desired to skate backward or to do fancy skating, the pawl F should be disengaged. To enable this to be readily accomplished, I provide a lever, G, (shown best in Fig. 2,) which, when moved to the position shown, lifts the pawl, so that its free end is clear of the ratchet-wheel, as shown in Fig. 1. The lever G is an elbow-lever, and is made of elastic sheet metal, one arm acting on the pawl and the other arm extending to the side of the skate and there turned up to serve as a handle. When turned to the position shown in dotted lines in Fig. 2, its end passes beyond the pawl and the latter drops upon the ratchet-wheel again.

In order to enable the skater to stop himself in the same manner as in ice-skating—namely, by pressing upon the heel of the skate—I have provided the brake shown in Figs. 1, 2, and 3. It consists of a brake-lever, H, the upper arm of which forms a brake-shoe and the lower arm bears a roller, *h*, which in ordinary skating barely touches the floor, or is lifted slightly above the floor. When the skater throws his weight upon his heel, the pressure comes upon this roller and tilts the lever H, thus pressing its upper arm against the rollers C C. The upper arm of the lever is broad enough to press upon both rollers, and forms, in fact, a brake-shoe.

I claim as my invention—

1. In a roller-skate, the combination, with

the usual front roller or rollers, of a ratchet-wheel fixed thereto and a gravity-pawl loosely pivoted beneath the foot-plate, with its free end adapted to engage said ratchet, and thereby prevent a backward rotation of the roller, substantially as set forth.

2. In a roller-skate, the combination, with the front rollers, B B, of ratchet-wheel E, embraced between them, and having spurs *b b*, which penetrate them, and with pawl F, substantially as set forth.

3. In a roller-skate, the combination of bearing-bracket D, having holes *c* and indentations *d d*, with pawl F, having ears *e e*, and with

ratchet-wheel E and rollers B B, substantially as set forth. 15

4. In a roller-skate, the combination, with ratchet-wheel E and pawl F, of lever G, adapted to disengage the pawl from the ratchet, substantially as set forth. 20

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

MICHAEL F. HANLON.

Witnesses:

AUTHUR C. FRASER,
HENRY CONNETT.



Patented Apr. 22, 1884.

Fig. 1.

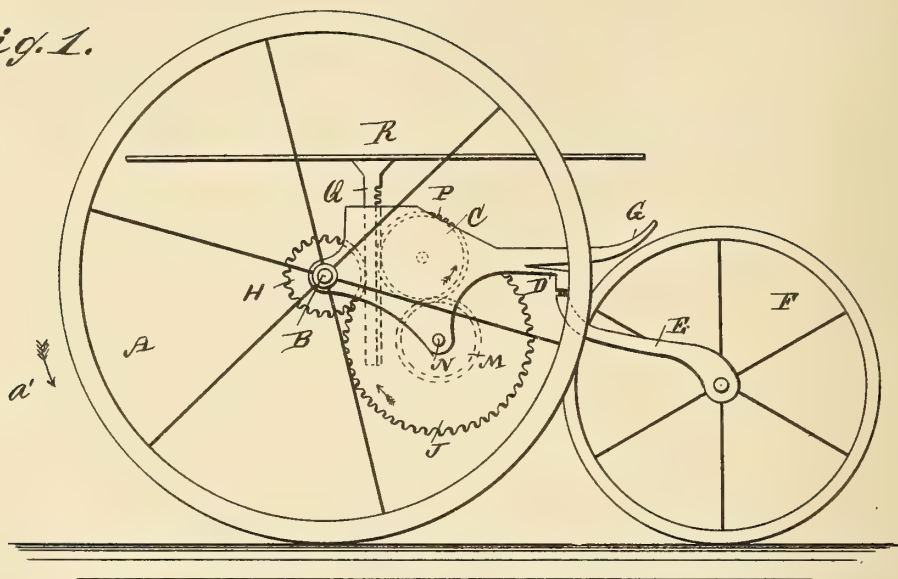


Fig. 2.

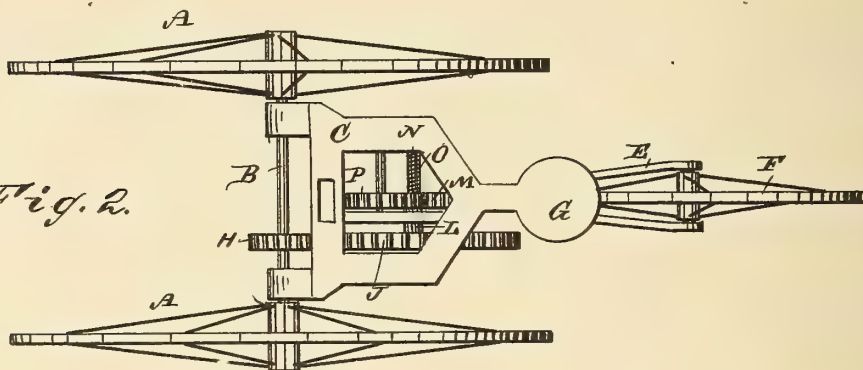
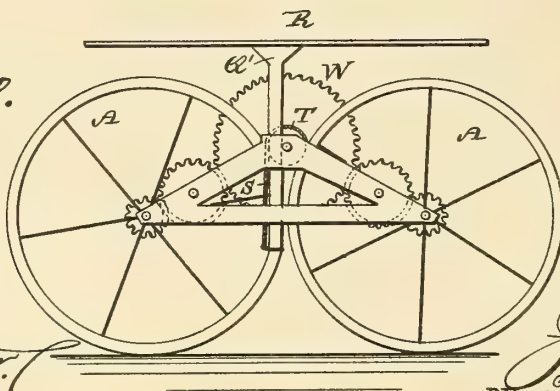


Fig. 3.



INVENTOR:

Rev. G. Foster.
C. Sedgwick

INVENTOR:
J. P. Hall
BY J. P. Hall
Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

TOMAS P. HALL, OF TORONTO, AND JAMES B. HALL, OF GEORGETOWN,
ONTARIO, CANADA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 297,388, dated April 22, 1884.

Application filed September 15, 1883. (No model.)

To all whom it may concern:

Be it known that we, TOMAS P. HALL, of Toronto, Province of Ontario, Canada, and JAMES B. HALL, of Georgetown, Province of Ontario, Canada, have invented a new and Improved Roller-Skate, of which the following is a full, clear, and exact description.

The object of our invention is to provide an improved motor or vehicle, which can be attached to the foot.

The invention consists in a small vehicle adapted to be fastened to the foot, and constructed with a vertically-reciprocating platform, from which the motion is transmitted to the driving-wheels by suitable gearing or belts, the said platform being pressed upward by a spring and downward by the foot, the gearing being provided with a clutch, which locks or engages when the platform is pressed downward and slips when the spring presses the platform upward. The rear wheel is journaled on a fork pivoted to a spring-arm of the frame, above which spring a tongue projects, which serves as a brake.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal elevation of our improved gravimotor. Fig. 2 is a plan view of the same, parts being omitted; and Fig. 3 is a longitudinal elevation of a modification of the same.

Two driving-wheels, A, are mounted on the ends of a shaft or axle, B, journaled in the front part of a platform-frame or foot-rest, C, which is provided at its rear end with a projecting spring-arm, D, to the end of which a fork, E, is pivoted in such a manner that it can swing laterally, a third wheel, F, being journaled in the said fork. A bracket-plate, G, projects from the rear of the platform C, over the spring D, and over part of the rear wheel. A pinion, H, is rigidly mounted on the axle B and engages with a cog-wheel, J, pivoted to the downwardly-projecting part of the frame C. On the wheel J a clutch-disk, L, is formed, and a like clutch-disk is formed on a cog-wheel, M, loosely mounted on a shaft, N, on which the wheel J is mounted. A

spring, O, coiled around the shaft, has one end connected with the cog-wheel M, and the other end to the frame of the platform C. The cog-wheel M engages with a cog-wheel, P, which in turn engages with a rack, Q, supporting a platform, R, or foot-plate. The rack Q passes through a suitable opening in the platform C.

In the modification shown in Fig. 3 two or four wheels can be provided, all of which are drivers. In place of the rack Q, a rod or bar, Q', is provided, which has a strap or belt, S, attached to its lower end, the other end of which strap is secured to a wheel, T, mounted on the same shaft with a cog-wheel, W, from which the motion is transmitted by suitable means to the shafts of the driving-wheels. If the plate R is depressed, the clutch-disks engage and the wheels A are revolved in the direction of the arrow *a'* by the intermediate gearing-belt or other device. Thereby the spring O is brought in tension. When the pressure is removed from the plate R, the spring O uncoils or expands and turns the cog-wheels M and P in such a manner as to throw the rack Q and the plate R upward, the clutch-disks sliding over each other, and thus permitting the wheels A to revolve in the direction of the arrow *a'*. The vehicle can thus be propelled forward by pressing the plate R down by means of the foot, and then permitting it to rise alternately. As a motor is fastened to each foot, it is only necessary to bring the weight of the body on each foot alternately. If the weight of the body is brought on the rear end of the foot-plate R, the spring-arm D is bent slightly, and the end of the tongue G will be brought in contact with the wheel F, and thus serve as a brake.

The vehicle can be operated very easily, and very great speed can be obtained.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A foot-power vehicle or wheel-skate having a foot-rest downwardly movable by the gravity of the operator and upwardly by a spring, for the purpose specified.

2. The combination, in a gravimotor having two front wheels, with a rear wheel, F, of

a spring-supported brake-plate and a vertically-reciprocating foot-rest, whereby the brake may be applied by throwing the weight on the heel, as described.

5 3. A gravimotor having the front wheels, A, A, the bearing-frame C, a single rear wheel, F, and a bearing frame or fork, E, jointed to said frame C, as shown and described.

10 4. The combination, with a platform, C, of the vertically-reciprocating platform R, the shaft B, the driving-wheels A, the pinion H, the cog-wheels P, M, and J, the clutch L, the spring O, and the rack Q, substantially as herein shown and described.

15 5. The combination, with the frame C, pro-

vided with the spring-arm D, of the fork E, pivoted to the arm D, the wheel F, and means for revolving the driving-wheels, substantially as herein shown and described.

6. The combination, with the frame C, pro- 20
vided with a spring-arm, D, and a tongue, G, of the fork E, pivoted to the spring-arm D, the wheel F, and means for revolving the driving-wheels, substantially as herein shown and described.

T. P. HALL.

J. B. HALL.

Witnesses:

MINNIE E. HALL,

MARTHA E. KERR.

(No Model.)

C. F. MORSE.

ROLLER SKATE.

No. 298,110.

Patented May 6, 1884.

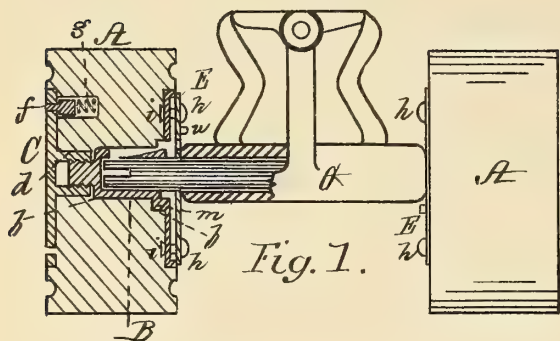


Fig. 1.

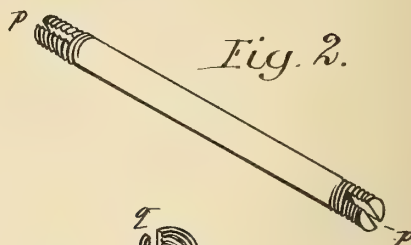


Fig. 2.

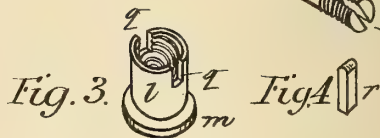


Fig. 3.

Fig. 4.

Fig. 5.

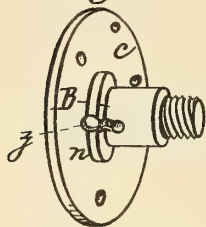


Fig. 6.

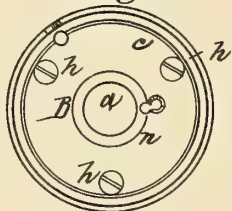


Fig. 7.

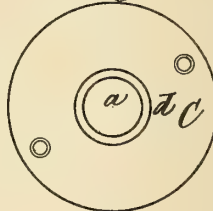


Fig. 11.

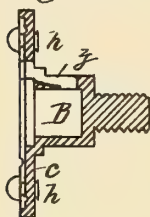


Fig. 9.



Fig. 8.

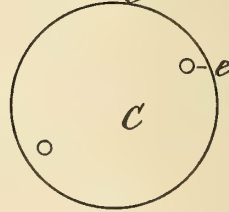


Fig. 12.

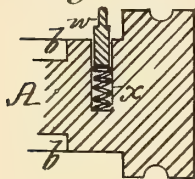


Fig. 13.

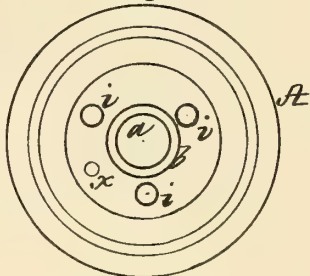


Fig. 10.

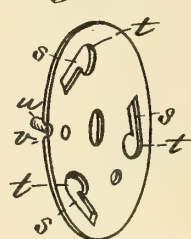
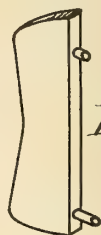


Fig. 14.



Witnesses :

Enoch O. Merrill.

Edward A. Bowers.

Inventor.

Charles F. Morse,

per Norman W. Stearns,

Att'y.

UNITED STATES PATENT OFFICE.

CHARLES F. MORSE, OF SOMERVILLE, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 298,110, dated May 6, 1884.

Application filed February 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. MORSE, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain

Improvements in Roller-Skates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a pair of skate-rollers with their connecting-axle constructed in accordance with my invention and applied to one of the bearings on the under side of a skate, one roller being in section and the other in elevation. Fig. 2 is a perspective view of my axle; Fig. 3, a perspective of the adjustable journal which screws thereon. Fig. 4 represents the key by which the said journal, when adjusted, is locked upon the end of the axle. Fig. 5 is a perspective of one side of the box, located in the wheel in which the axle-journal bears. Fig. 6 is an elevation of the other side of the said box. Figs. 7 and 8 are elevations of the opposite sides of the outer face-plate, which holds the journal-box in place within the wheel. Fig. 9 is a view of one side of the inner face-plate, by which the journal is retained within the wheel-box. Fig. 10 is a view of the opposite side of said inner plate. Fig. 11 is a section representing the lubricating-passages. Fig. 12 is a section through the spring-actuated pin for keeping the outer face-plate in place; Fig. 13, an elevation of the inside of the wheel with its box and plates removed. Fig. 14 is a view of the spanner-wrench which I employ in securing the parts together or in detaching them.

This invention relates exclusively to the construction and manner of connecting a pair of skate-rollers with their axle. The ordinary way of securing such rollers is by the passage through the holes centrally made in the wooden rollers of an axle-bolt having a head at one end and a slot in the other for the reception of a bent retaining-wire. This construction is objectionable, for the reasons that the oil used for lubricating is free to escape outside through the central hole in the roller, and soils the dress of the skater. The dress also catches against the projecting end of the axle-bolt and its retaining-pin. Said projecting end and pin under one skate are liable to strike against the

corresponding portions of the axle under the other skate of the pair on the feet of the skater. The dirt is sure to accumulate around the axle and grind and wear away the bearing in the wheel, and enlarge the hole therein so rapidly that the axle and wheels play too loosely on each other, and it is difficult to remove the retaining wire or pin when the parts are to be separated to clean them.

To overcome these objections is the purpose of my present invention, which consists in a wheel having a metal box for the reception of a journal, which screws on a threaded end of the axle, and is locked thereto by a key when adjusted, a smooth metal face-plate flush with the outside of the wheel being employed to hold the journal-box therein, and an inner face-plate to retain the journal within its box, by which construction oil is entirely or in a great measure prevented from escaping from the wheel. No projections exist for the dress to catch against. Dirt is precluded from entering the journal-box, the rattling of the parts avoided, the friction reduced to the minimum, and the wear readily compensated by the adjustable journal.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents a wooden roller, having a cylindrical hole, *a*, passing centrally through it, Fig. 13, and provided with an inner and an outer annular shoulder, *b*, the said hole being for the reception of a journal-box, B, Figs. 1, 5, and 6, having an inner annular flange, *c*, of considerable diameter let into the inner face of the wheel, and for a smooth plate, C, Figs. 1, 7, and 8, fitted in flush with the outside of the wheel, the outside of the journal-box screwing into the turned-down portion *d* of the interior of the outer face-plate, C, by which means they are both retained in their proper positions in the wheel.

e is a circular hole made through the outer face-plate, C, for the reception of a spring-actuated pin, *f*, located in a hole, *g*, in the contiguous portion of the wooden roller A, when the hole *e* in the plate is brought in line with the pin after the plate has been turned sufficiently to draw the journal-box B into the desired position in the wheel, the pin preventing

the revolution of the plate C and its unscrewing and separation from the journal-box. The journal-box is also prevented from turning accidentally and unscrewing from the outer face-plate, C, by headed pins *h*, which pass through the flange *c* of the journal-box B into holes *i*, made in the adjacent inner surface of the wheel.

D, Fig. 2, is the axle, each end of which has a screw-thread, *k*, cut thereon, over which turns a screw-threaded hollow journal, *l*, Fig. 3, provided at its inner end with an annular flange, *m*, which fits into a shouldered recess, *n*, of the journal-box, Fig. 5. The outer end of the axle is provided with a rectangular notch, *p*, and the annular wall of the corresponding end of the journal is also provided with two notches, *q*, of similar width, diametrically opposite each other, the notches in the journal and axle being for the reception of a key, *r*, Fig. 4, for locking them together, when so adjusted as to bring the inner side of the flange *m* of the journal against the outer side of an inner face-plate, E, and cause the latter to abut against the contiguous end of the bearing G of the axle on the under side of the skate, the inner face-plate, E, being provided with a number of slots, *s*, corresponding to those of the headed pins *h*, each slot having an enlarged portion, *t*, to admit of the plate being fitted upon the flange *m* of the journal-box, after which said plate is turned a partial revolution by a short projection, *u*, till the plate passes under the heads of the pins *h*, and a notch, *v*, in the periphery of the plate is brought in line with a spring-actuated pin, *w*, located in a hole, *x*, in the inner surface of the wheel, and passing through a hole, *y*, in the flange *m* of the journal box, whereby the inner plate is prevented from turning and the wheel from being detached from its journal, the distance between the two inner face-plates, E, corresponding to the distance between the ends of the axle-bearing G on the under side of the skate.

To lubricate the journals of the axle, an oil passage, *z*, is provided, said passage extending from the outside of the inner face-plate, E, through the flange *m* of the journal-box B, through the latter to the journal *l*, whereby the lubricant is conducted to the surfaces,

where the greatest friction occurs, the outer end of the journal-box being closed to preclude the escape of the same and soiling the dress of the skater.

To remove the parts, when the journals are to be adjusted to compensate for the slight wear resulting by continued use, or for other purposes, I employ a spanner-wrench, H, (of the form seen in Fig. 14,) having two projections, 15 16, the longer one of which enters the hole *e* in the outer plate, C, occupied by the pin *f*, which is pressed in against the resistance of its spring, thus permitting the plate to be unscrewed from the journal-box, the inner face-plate, E, being unlocked after pressing the spring-pin *w* out of the notch *v*.

The outer face-plate, C, may be provided with a central hole, and the journal-box *l* be lengthened, so as to extend therein; but in such case the outer surfaces of both would be continuously smooth and flush with each other to avoid the existence of objectionable projections.

I claim—

1. An axle, D, having screw-threaded ends, journals *l*, capable of adjustment thereon, and a means of locking them thereto, in combination with a pair of rollers, A, having journal-boxes B, and a means of securing them therein, constructed to operate substantially as and for the purposes described.

2. An axle, D, having its ends provided with screw-threads *k* and notches *p*, in combination with notched journals *l*, adjustable thereon, and keys *r*, for locking them thereto, as set forth.

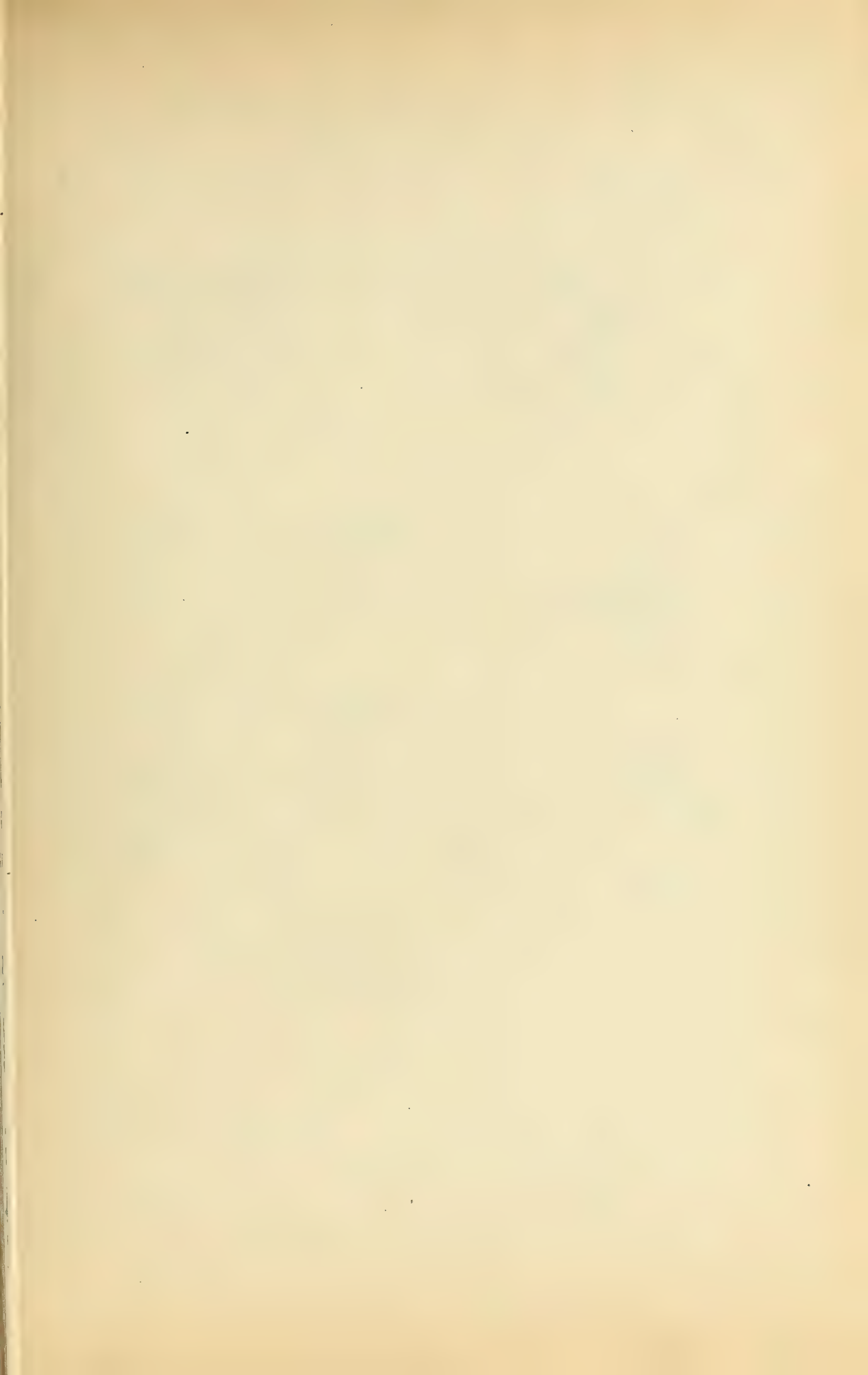
3. A roller, A, having a journal-box, B, and an outer face-plate, C, for retaining it therein, an axle, D, having screw-threaded ends, a journal capable of adjustment thereon, and an inner face-plate, E, for locking the roller upon the journal, as and for the purpose specified.

Witness my hand this 31st day of January, 1884.

CHAS. F. MORSE.

In presence of—

N. W. STEARNS,
ENOCH R. MORSE.



(No Model.)

W. C. VANNEMAN.

ROLLER SKATE.

No. 298,323.

Patented May 6, 1884.

Fig. 1.

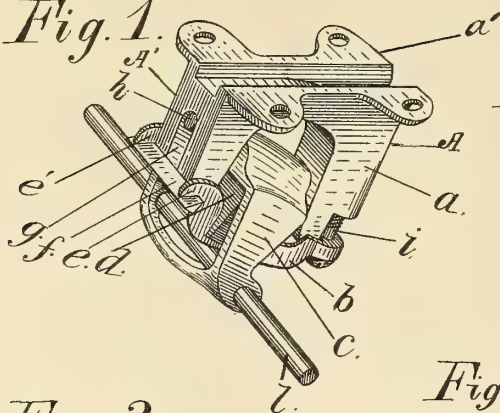


Fig. 2.

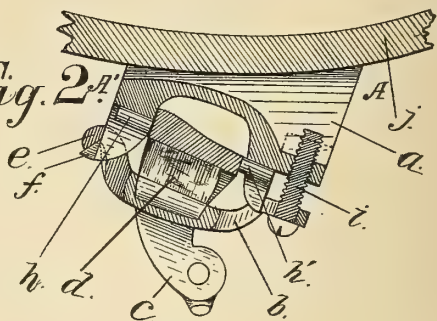


Fig. 3.

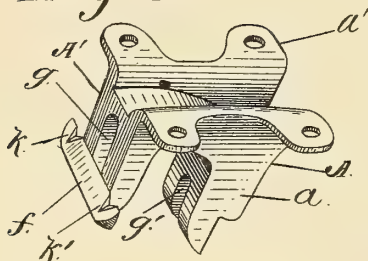


Fig. 4.

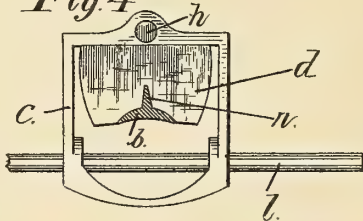


Fig. 5.

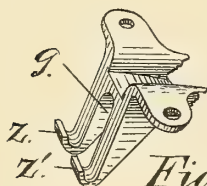
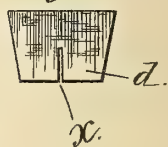


Fig. 6.

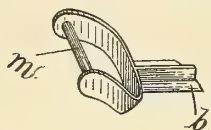


Fig. 7.

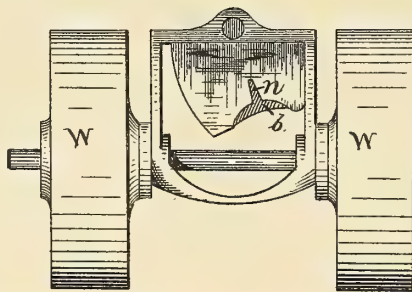
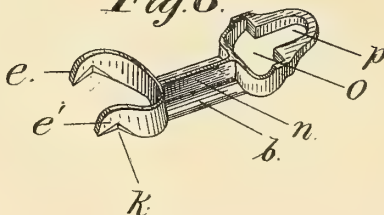


Fig. 8.



Witnesses,

A. K. Drexler
W. J. Dennis

Inventor,

William C. Vanneman

UNITED STATES PATENT OFFICE.

WILLIAM C. VANNEMAN, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 298,323, dated May 6, 1884.

Application filed January 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. VANNEMAN, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of roller-skates in common use for parlor and rink skating.

My invention consists in the novel construction of the trucks used and in the fewer number of pieces required.

In the drawings which accompany this specification, forming part of the same, Figure 1 is a perspective view of the hanger and truck frame and axle and bed-plate. Fig. 2 is a longitudinal vertical section of the hanger and truck frames, showing the spring in position; also the bed-plate. Fig. 3 is a perspective view of the hanger-frame. Fig. 4 is a vertical cross-section of the truck-frame. Fig. 5 is a front elevation of the rubber spring. Fig. 6 is a perspective of the front end of the hanger-frame and bed-plate, showing another form of connecting the same. Fig. 7 is an elevation of the truck, truck-frame, and spring when the spring is thrown sidewise by the action of the hanger-frame; also showing the form of the washer used to retain the wheel upon the axle and the manner of their use. Fig. 8 is a perspective view of the bed-plate.

In Fig. 1, *a* represents the hanger-frame, in which *a'* is the top surface, to which is attached the foot-piece, and which is provided with screw-holes admitting screws to secure the same.

Depending from the surface *a'* are lugs or projections, forming the ends of the hanger-frame *A A'*, as shown in Fig. 3. The projection *A* is furnished with a vertical slot or opening, *g'*, which receives the pivot *h'* of the truck-frame *c*. (Seen also in Fig. 2.) The projection *A'* has a similar slot or opening, *g*, which is closed at its lower end by a horizontal triangular cross-bar, *f*, rigidly attached to the lower ends of the projection *A'*. The edges of the cross-bar *f* are furnished with V-shaped notches outside of its point of contact with the

projection *A'*, which receive and support the ends *e e* of the bed-plate *b*. The ends *e e* of the bed-plate *b* are recessed to fit the notches *k k'* of the cross-bar *f*.

i, Fig. 1, is a temper-screw passing through an opening in the end of the bed-plate *b* at *p*, and engaging in a screw-thread in the projection *A* of the hanger *a*, as seen in Fig. 2.

d, Fig. 1, is a rectangular rubber spring resting upon the bed-plate *b*, and pressing against the top bar of the truck-frame *c*, provided with a vertical slot, *x*, Fig. 5. The lower portions of the truck-frame *c* are provided with holes to receive the axle *l*. The truck-frame *c* is provided with pivots *h h'*, which have their bearings in the slots *g g'* in the hanger-frame *a*, and upon which the hanger-frame *a* and the foot-piece to which it is attached are permitted an oscillating motion by the action of the operator. The bed-plate *b*, Fig. 8, is constructed of a horizontal bar, *b*, having an upward-projecting rib, *n*, (shown in Fig. 4,) a lateral opening, *o*, and loop *p* at one end of the bar, and semicircular jaws *e e*, provided with notches *k²*, at the opposite end, each end being elevated above the bar *b*, the jaws *e e* having their bearing in the horizontal cross-bar *f*, while the opposite end is supported by the head of the temper-screw *i*, by the action of which screw it is permitted a vertical motion, increasing or diminishing the pressure upon the spring *d*, which rests upon it, and which is held in place by the rib *n* being inserted in the slot *x*, Figs. 4 and 5.

In Fig. 7, *l* represents the axle, *w w* the wheels, and *q* the washer; *r*, the linch-pin. *s* is a raised projection on the face of the washer *q*, the projection being highest in the central portion, where the axle protrudes, at which place it is cut away to allow a vertical linch-pin to be inserted.

In Fig. 6 the front end, *A'*, of the hanging frame is provided with curved arms *z z'*, and the end of the bed-plate has a rod, *m*, secured horizontally between the jaws *e e*, which, when placed in the curved arms *z z'*, produces another form of support for that end of the bed-plate in which it is conveniently hinged. When the truck-frame is placed in position, with the jaws *e e* resting upon the cross-bar *f*, the screw *i* is inserted in the loop *p*, and screwed into

its thread in the projection *A*, the head of the screw *i* resting against the under surface of the loop *p*, and thus raising that end of the bed-plate. The spring *d*, being attached, as shown, to the upper surface of the bed-plate, is brought in contact with the under surface of the cross-bar which forms the top of the truck-frame *c*, and as the screw *i* is turned home the pressure on the spring is increased as may be required.

It will be seen that the hanger-frame *a*, the truck-frame *c*, and the bed-plate can be readily detached and disconnected by removing the temper-screw *i*, and that when these parts are in working position more or less density can be imparted to the spring *d* by means of the temper-screw *i*.

I am aware that it is not new to combine a pressure-plate with the roller-support, said pressure-plate being pivoted at one end, and adjustable at the other end by an adjusting-screw, and which I do not claim.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a roller-skate, the hanger-frame provided with pendent lugs at opposite ends, with a space between the lugs to receive a truck-frame, said lugs being slotted vertically to receive the axles of the roller-supporting truck, substantially as described.

2. In a roller skate, the bed-plate formed at one end with the forked arm, at the opposite end with the openings *o* and *p*, and between the two ends with the bar *b*, provided with the longitudinal rib *n*, substantially as described.

3. The combination of the hanger-frame provided with pendent lugs slotted vertically, and having at the end a support for a bed-plate, a truck-frame adapted to have an axle connected therewith, and provided with piv-

ots having their bearings in said vertical slots, and a bed-plate connected with said hanger-frame below the pivots of said truck-frame, substantially as described.

4. The combination of the hanger-frame, the truck-frame having a laterally-yielding connection therewith, a bed-plate below said truck-frame, and a spring-cushion between said bed-plate and truck-frame to restore said truck-frame to its normal position when relieved from strain, substantially as described.

5. The combination of the hanger-frame, the truck-frame having a laterally-yielding connection therewith, a bed-plate below said truck-frame, a spring-cushion between said bed-plate and truck-frame, and means for adjusting said bed-plate to tighten or loosen the connection between the parts, substantially as described.

6. The combination of the hanger-frame provided with pendent lugs slotted vertically, and having at the end a support for a truck-frame, a truck-frame provided with journals having their bearings in said slotted lugs, a bed-plate connected with the hanger-frame below the bearings of the truck-frame, a spring-cushion interposed between said truck-frame and bed-plate, and a screw for tightening the connection between said parts, substantially as described.

7. In a roller-skate, the combination, with the wheel and axle, of the washer *q*, provided with the projection on its face, and a linchpin to the axle to one side of the projection, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM C. VANNEMAN.

Witnesses:

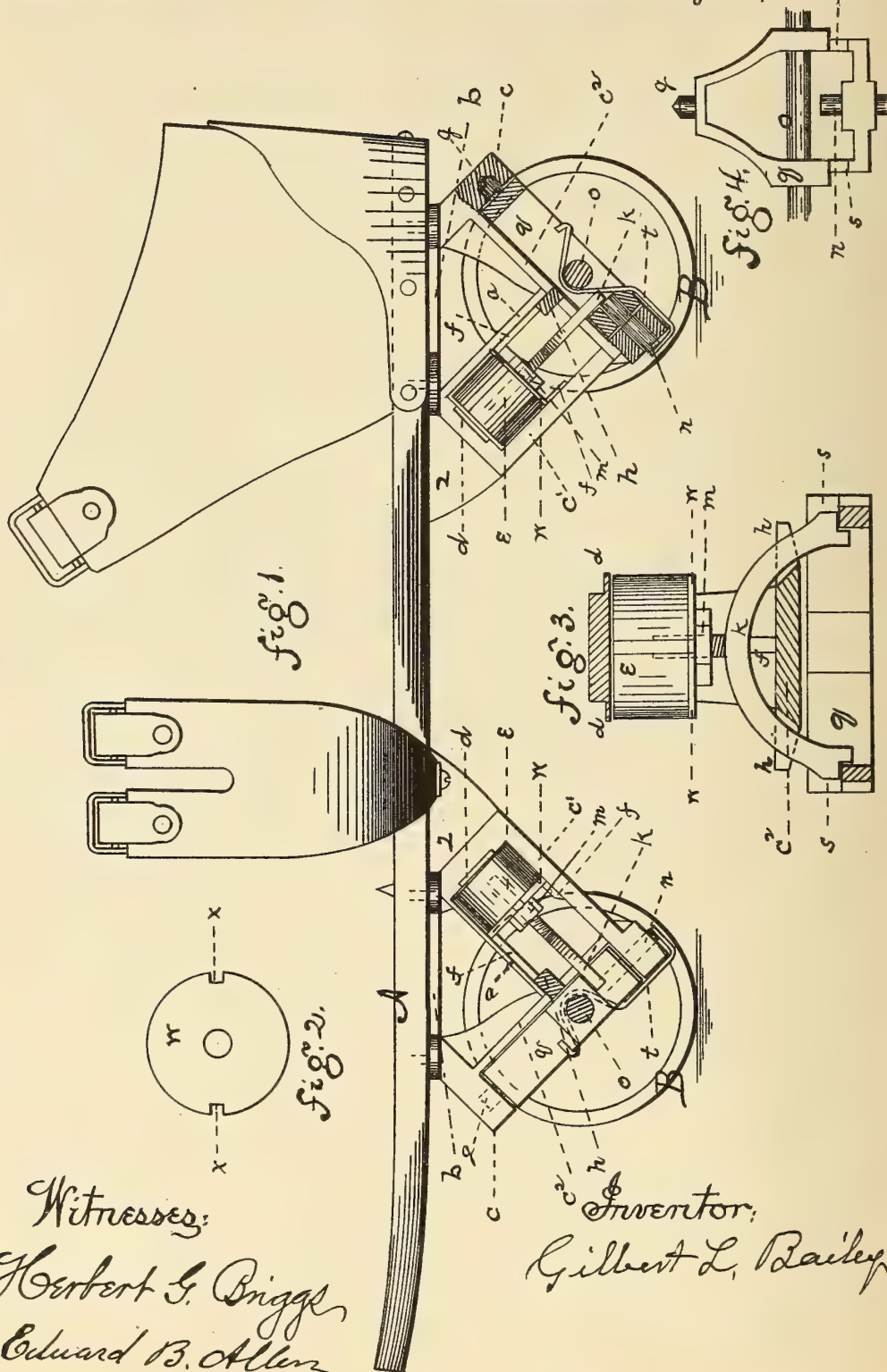
A. K. DEETS,
W. T. DENNIS.

(No Model.)

G. L. BAILEY.
ROLLER SKATE.

No. 298,721.

Patented May 20, 1884.



Witnesses:
Herbert G. Briggs
Edward B. Allen

Inventor:
Gilbert L. Bailey

UNITED STATES PATENT OFFICE.

GILBERT L. BAILEY, OF PORTLAND, MAINE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 298,721, dated May 20, 1884.

Application filed February 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, GILBERT L. BAILEY, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification.

My invention relates to an improvement in that class of roller-skates in which the foot-piece has a sidewise rocking or tilting motion, and wherein rubber springs are used to hold the roller carrier and axle in a position transversely parallel with the bottom of the foot-piece when at rest or running in a direct line, and to graduate the additional pressure put upon them in turning curves. Heretofore these springs have been applied in such a manner that when not in use they are necessarily under severe pressure, and the additional pressure put upon them in turning curves acts only upon one part of the rubber at one time, which conditions conduce to render them useless in a very short time. Again, the axles on which the rollers turn, the bearings of the roller-carrier, and the bearing-point of the spring on said carrier have heretofore been placed on different planes, which is inconsistent with the correct action of the parts.

The objects of my invention are, first, to provide a rubber spring for a roller-skate that will be subject to but slight pressure when at rest, and when in use be compressed bodily or over its whole surface by the act of turning in either direction from a direct line; second, to insure the axle being held in a line transversely parallel with the foot-piece when at rest; third, to afford facilities for the proper adjustment of the pressure of the springs; fourth, to provide a roller carrier and axle with bearings whose longitudinal centers and the point of resistance between the carrier and spring, respectively, shall be on the same plane; and, fifth, to afford facilities for readily disconnecting the roller-carrier and hanger. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the foot-piece of a skate with two rollers removed, showing my improvement. Fig. 2 is a plan view of a follower. Fig. 3 is a sectional view, showing a rubber spring, yoke, and roller-carrier. Fig.

4 is a plan view of a roller-carrier with the axle in its bearings.

Similar letters and figures refer to similar parts throughout the several views.

Plate *b* of the hanger is fastened to the bottom of foot-piece *A*, and has two parallel arms, *c c'*, projecting downward, longitudinally inclined with respect to the foot-piece, one being shorter than the other. The roller-carrier *q*, which is an irregular shaped frame, the construction and form of which are plainly shown in Fig. 4, receives the axle *o*, on which rollers *B B* are mounted transversely through the thicker portions of its sides, and is pivoted to arms *c c'* at their lower ends. Pivot *g*, which is made integral with the carrier, has its bearing in the short arm *c*, and a pin, *n*, connects the other end to the long arm *c'*. Pin *n* is kept from accidental displacement by spring-guard *t*, and can be easily removed when necessary. On these bearings foot-piece *A* is tilted, and is limited in its action by a stop, *h*, that projects laterally from each side of bar *c'*, above carrier *q*, against the upper side of which it strikes. A cylindrical rubber spring, *E*, is placed in its seat *d*. The upper portion of yoke *k* carries a screw-thread and nut *m*, and penetrates the rubber spring a short distance through a central opening in follower *W*, the latter being placed above and held in contact with the spring by the nut *m*. The lower arms of yoke *k* straddle bar *c'*, and have shoulders at their ends which rest in notches *S S* cut in each side of the roller-carrier frame *q*. This completes the connection between the carrier and spring, the pressure of the latter being thereby transmitted to the former. Guides *f f* work through notches *x x* of follower *W* when the spring is compressed, thus holding yoke *k* and spring *E* in a line perpendicular to the face of spring-seat *d*, and causing the compression of the spring to be equal over its whole surface. The tension of spring *E* may be adjusted by turning nut *m*. A thin plate or web, *2*, rises from the upper side of spring-seat *d*, which may be made the central bearing of a right and left threaded screw when clamps are used to hold the skate to the foot; but may be dispensed with when straps are used. The longitudinal centers of axle *o*, carrier-bearings *n* and *g*, and the bottom of notches *S S* are all fixed on the

same plane, thus insuring that ease of action unattainable by any other arrangement of the parts. When the skater is in an upright position the pressure of the spring through the medium of yoke *k* is exerted equally upon the outer portions of the carrier on either side of the center of oscillation, whereby the axle *o* is held transversely parallel with the bottom of the foot-piece. The longitudinal inclination of the roller-carrier *q* in this case is greater than that ordinarily adopted in roller-skates, by reason of which there is more resistance to the tilting of the foot-piece in the mechanism itself, and so requires less resistance on the part of the rubber spring when the foot-piece is tilted.

I do not wish to be understood as limiting myself to the exact form of roller-carrier above described, as I am aware that it may be made in other forms embracing the same features of action.

Its operation is as follows: When the foot-piece *A* is tilted to one side to turn a curve the distance between spring-seat *d* and the bearing of yoke *k* on that side of carrier *q* is shortened, and as the yoke cannot move from its relative position, it follows that spring *E* will be compressed between its seat and follower *W*. By this movement (the tilting of the foot-piece to one side) the opposite arm of yoke *k* is raised from its bearing, and as the foot-piece is righted the spring recoils, and it (the arm) is carried back to its place. To hold it in this position but slight pressure of the spring is required by reason of the distance between its points of bearing on carrier *q*, both ends resting thereon. Substantially the same results might be obtained by reversing the operation of the parts between the spring and carrier, placing the bearing of the yoke on the lower side of the carrier and passing the upper end of yoke *k* through the spring, with the follower and nut acting on the upper and the seat at the lower end of the same; but I prefer the arrangement herein shown.

The particular description of some parts, such as are common to other roller-skates, has been omitted here, as being unnecessary.

I am aware that the foot-piece of a roller-skate has been arranged to have an elastic rocking motion, and I make no claim to such

motion. I am also aware of the invention of Freeman and Carkeet, No. 106,045, August 2, 1870, and of W. H. Bliss, patented July 19, 1881, No. 244,372, and I do not claim any part of their inventions; but,

Having described my invention, what I claim is—

1. In a roller-skate, the combination of plate *b*, fastened to foot-piece *A*, arms *c c'*, longitudinally-inclined frame, roller-carrier *q*, carrying axle *o*, having rollers mounted thereon, pivoted thereto, bar *c'*, having stops *h h* projecting laterally therefrom above said roller-carrier and adapted to strike upon the upper portion thereof, and graduating-spring *E*, acting thereon through the intermediate yoke, *k*, substantially as shown and described.

2. In a roller-skate, a carrier consisting of frame *q*, substantially as shown, adapted to be pivoted to the arms of a hanger and having notches cut in its sides opposite each other, in combination with an axle upon which rollers are mounted, transversely supported thereon in such a position that its longitudinal center, the pivotal center of said carrier, and the bottom of said notches will be upon the same plane, substantially as and for the purpose herein set forth.

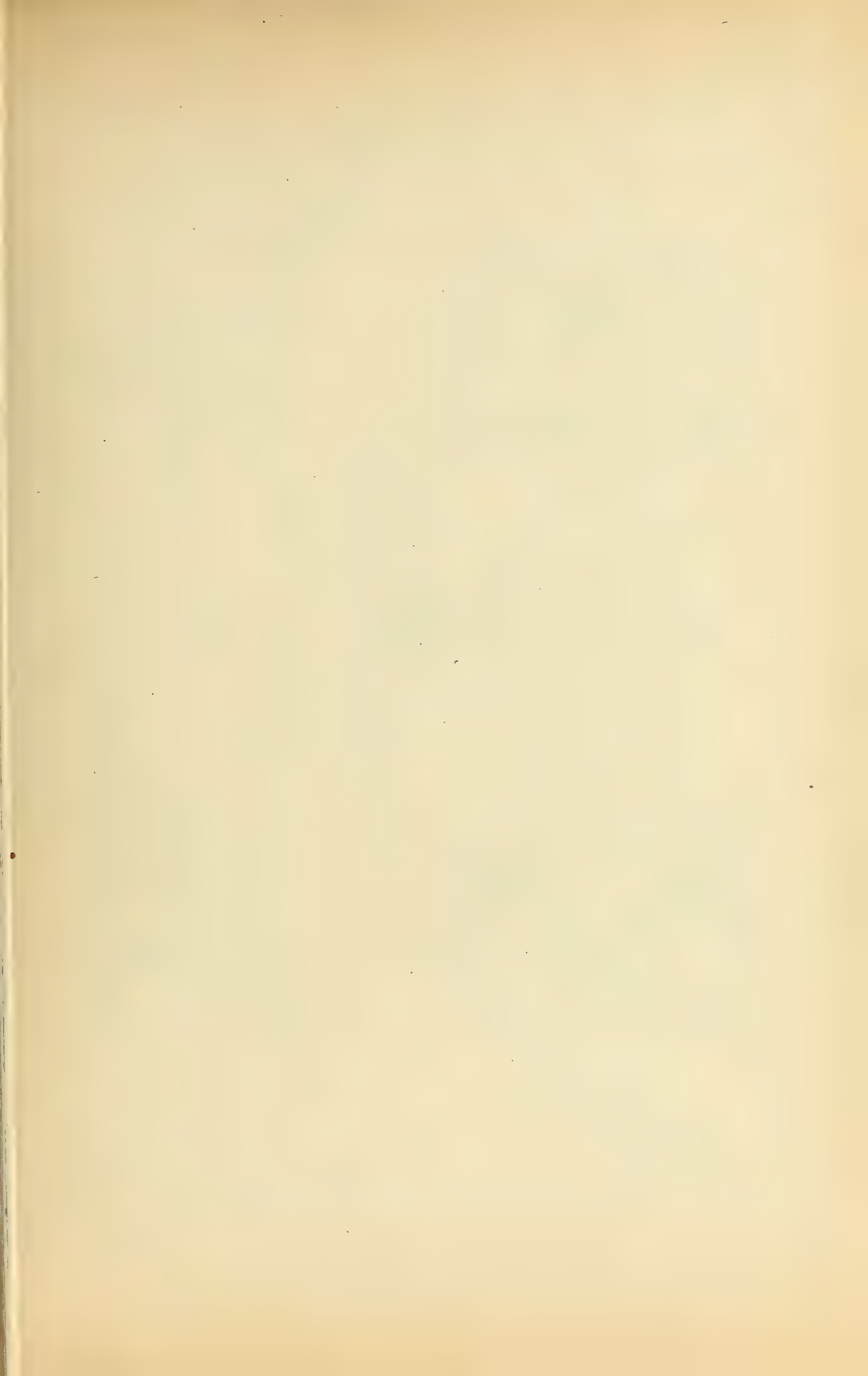
3. In a roller-skate having a swiveling roller-carrier, a spring acting on said carrier through an intermediate yoke adapted to bear upon each side of its center of oscillation, said yoke having an adjustable screw-threaded nut and being held in its proper line of travel by a notched follower working on guides against said spring, substantially as and for the purpose herein set forth.

4. In a roller-skate, plate *b*, fastened to foot-piece *A*, arms *c c'*, roller-carrier *q*, supporting-axle *o*, having rollers mounted thereon and swiveled to said arms, spring-seat *d*, spring *E*, notched follower *W* in contact with said spring, guides *f f*, and yoke *k*, carrying screw-threaded nut *m*, combined and operating substantially as herein described.

GILBERT L. BAILEY.

Witnesses:

M. A. BLANCHARD,
WILLIAM E. KNIGHT.



(No Model.)

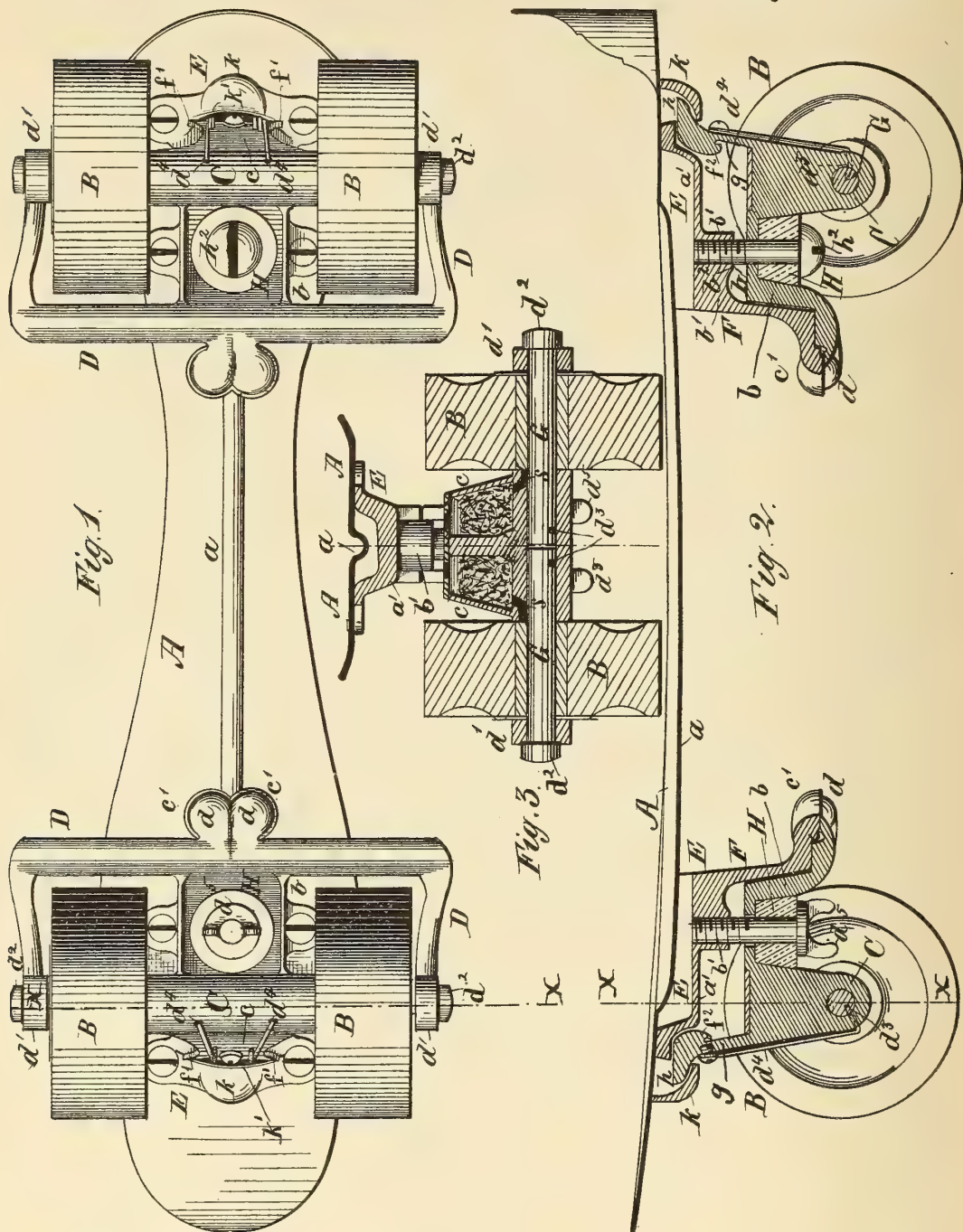
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C. E. FLAGG.

ROLLER SKATE.

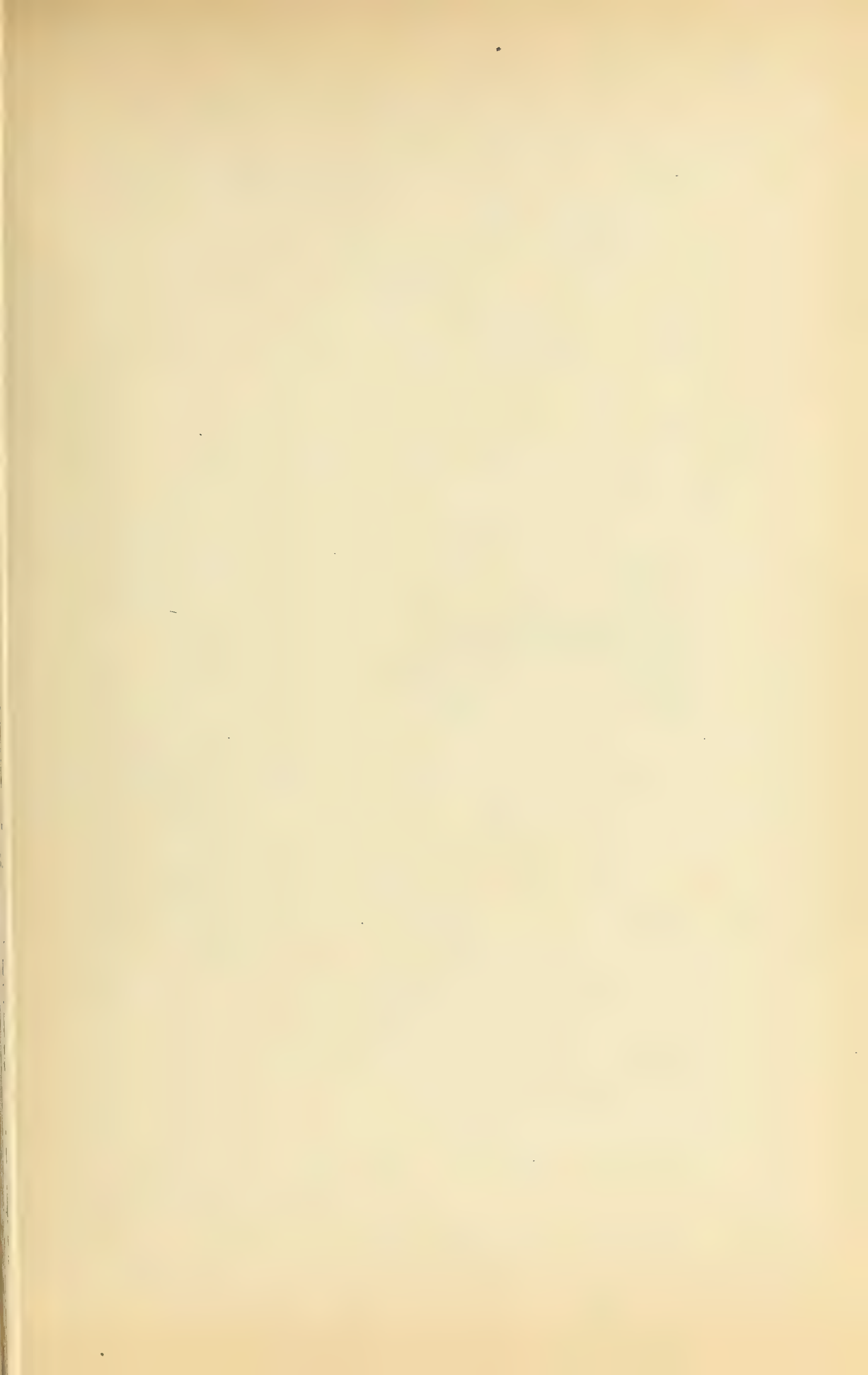
No. 298,838.

Patented May 20, 1884.



Witnesses
G. B. Towles
W. A. Daniels

Inventor
Charles E. Flagg
By W. Purvis
Atty



(No Model.)

2 Sheets—Sheet 2.

C. E. FLAGG.

ROLLER SKATE.

No. 298,838.

Patented May 20, 1884.

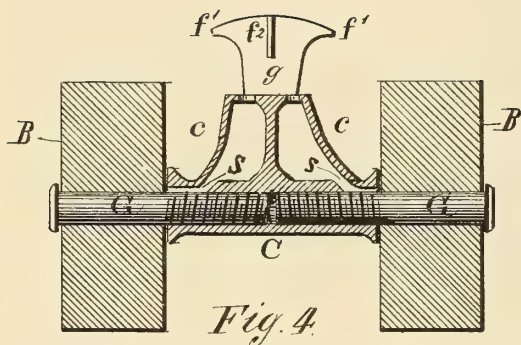


Fig. 7.

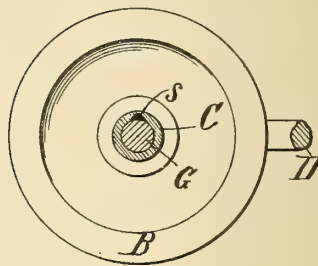
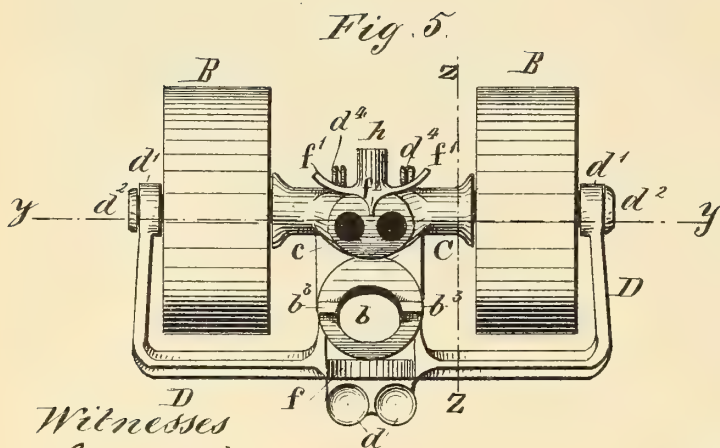
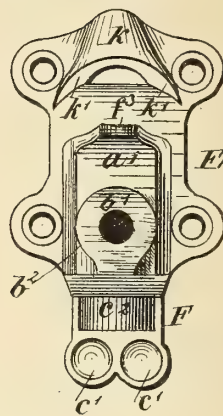


Fig. 6.



Witnesses
G. B. Fowler.
H. A. Daniels

Inventor:
Charles E. Flagg
By W. Burris
Atty

UNITED STATES PATENT OFFICE.

CHARLES E. FLAGG, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 298,838, dated May 20, 1884.

Application filed March 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. FLAGG, a citizen of the United States of America, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to roller-skates; and it consists of the construction and combinations of the devices and parts by means of which the rollers are connected with the foot-rests, as hereinafter fully set forth and specifically claimed.

In the accompanying drawings, Figure 1 is a plan of the under side of one of the skates with my improvements. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a vertical section on line *x x* of Figs. 1 and 2. Fig. 4 is a vertical section on line *y y* of Fig. 5. Fig. 5 is a plan of one of the axle-frames detached. Fig. 6 is an under side view of bed-plate detached. Fig. 7 is a cross-section of one of the axle-boxes and axles on line *z z* of Fig. 5.

A designates a foot-rest made of any suitable material, preferably of steel, and is provided with a longitudinal strengthening-rib, *a*, which may be stamped on or riveted to the bottom of the foot-rest, or the foot-rest and the rib may be cast of malleable iron or other suitable material.

B are the rollers.

C designates central axle-boxes, which are formed of the same casting with the cushion-boxes *b*, the oil-boxes *c*, roller-frames D, the two ball-bearings *d d*, the segmental bearing *f*, the standard *g*, provided with the lugs *f' f'*, and the head *h*.

E designates the bed-plates, provided with the requisite holes to receive the rivets or bolts with which the plates are fastened to the foot-rests. These bed-plates have cast on them the projections *k*, having the inclined edges *k'*, the projection *a'*, and threaded sockets *b'*, having the shoulders *b''*, forming stop-bearings for the lugs *b''* on the cushion-boxes *b*. The pendants F of the bed-plates have formed on them the two inverted cups or concave sockets *c' c'* and the segmental concave recess *c''*, to receive the

balls *d d* and bearing *f*, above described, on the lower portion of the couplings. The roller-axes are made in two separate parts, G G, inserted through holes in the ends *d'* of the arms of the frame D and into the axle-boxes C. The outer ends of these axles are provided with heads *d''*, having bearing-shoulders, and the inner portions of the axles are provided with slots or holes *d'''*, to receive the ends of the spring-wires *d'*, for keying the axles in their boxes.

H designates the elastic cushions, secured in the cushion-boxes by means of the thumb-screws *d''*, inserted through the cushions and through openings in the cushion-boxes into the threaded sockets *b'*.

The oil-boxes *c* consist of two chambers, which are connected with the axle-bearings by means of the tubes *s s*, formed in or drilled through the bottom of the oil-boxes, into the interior of the axle-boxes, and extended horizontally along the interior of the axle-boxes, as shown in Figs. 3, 4, and 7 of the drawings. These oil-boxes are adapted and designed to receive packing, preferably raw cotton, to prevent the oil from flowing too freely to the axle-bearings.

The frame-arms may be dispensed with, and the separate sections of the axles may be tapped into the axle-boxes.

It is evident that ordinary slotted-head screws, *h''*, may be used instead of the thumb-screws *d''*; but I prefer the latter, for the reason that no screw-driver is required to adjust the tension of the screws upon the cushions.

My improved double socket and ball bearings afford steady, firm, horizontal support to the foot-rest when the pressure of the foot upon the rest is vertical and the movements are in direct lines, while at the same time they allow all requisite oscillating movements in turning or running on curved lines. Where the bearings are upon elastic cushions, there is little or no horizontal or side support, which allows too much strain upon the ankles, and in such skates very severe tension is required upon the elastic cushions, while with my improvement the bearing is not on the cushion, but on the ball-bearings and their sockets, and comparatively light tension is required upon the cushion, sufficient only to hold the bearings together.

It will be seen that the sockets or cups *c' c'*

are inverted, forming the upper portion of the bearings, and they are thus protected from liability of dirt lodging in them. In turning or running on curved lines the tilting of the foot-rests to one side causes the lugs $f' f'$ on the standard g to slide along the inclined edges k' of the projection k , which produces the requisite backward and forward oscillatory movements of the roller-axles. The upper surface of the standard g and a portion of the head h have bearing upon the under side of the bed-plate. The edge of the lug f^2 has bearing in a concave recess, f^3 , on the projection a' , which aids in holding the standard and other bearings in place.

The roller-axles being made in the two separate parts and keyed separately in the axle-boxes, as set forth, each part may be removed for any required purpose without unkeying the other part.

What I claim as new, and desire to secure by Letters Patent, is—

1. The roller-skate bearings, consisting of the inverted cups or concave sockets $c' c'$ and the segmental concave recess c^2 , in combination with the balls $d d$, and the segmental convex bearing f , substantially as and for the purposes described.

2. The combination, with the bearings $c' c'$,

$d d$, c^2 , and f , of the cushion-boxes b , cushions H , and a set-screw adapted to hold the parts together, substantially as and for the purposes described.

3. The axles in two separate parts, $G G$, provided with holes or slots d^2 , in combination with the arms $d' d'$, the spring-keys d^4 , and the axle-boxes C , provided with holes to receive the ends of the keys, substantially as and for the purposes described.

4. The roller-skate axle-boxes C , provided with the oil-boxes $c c$, adapted to receive packing to retain the oil, and connected with the axle-bearings by means of the tubes $s s$, formed in and along the axle-boxes, substantially as and for the purposes described.

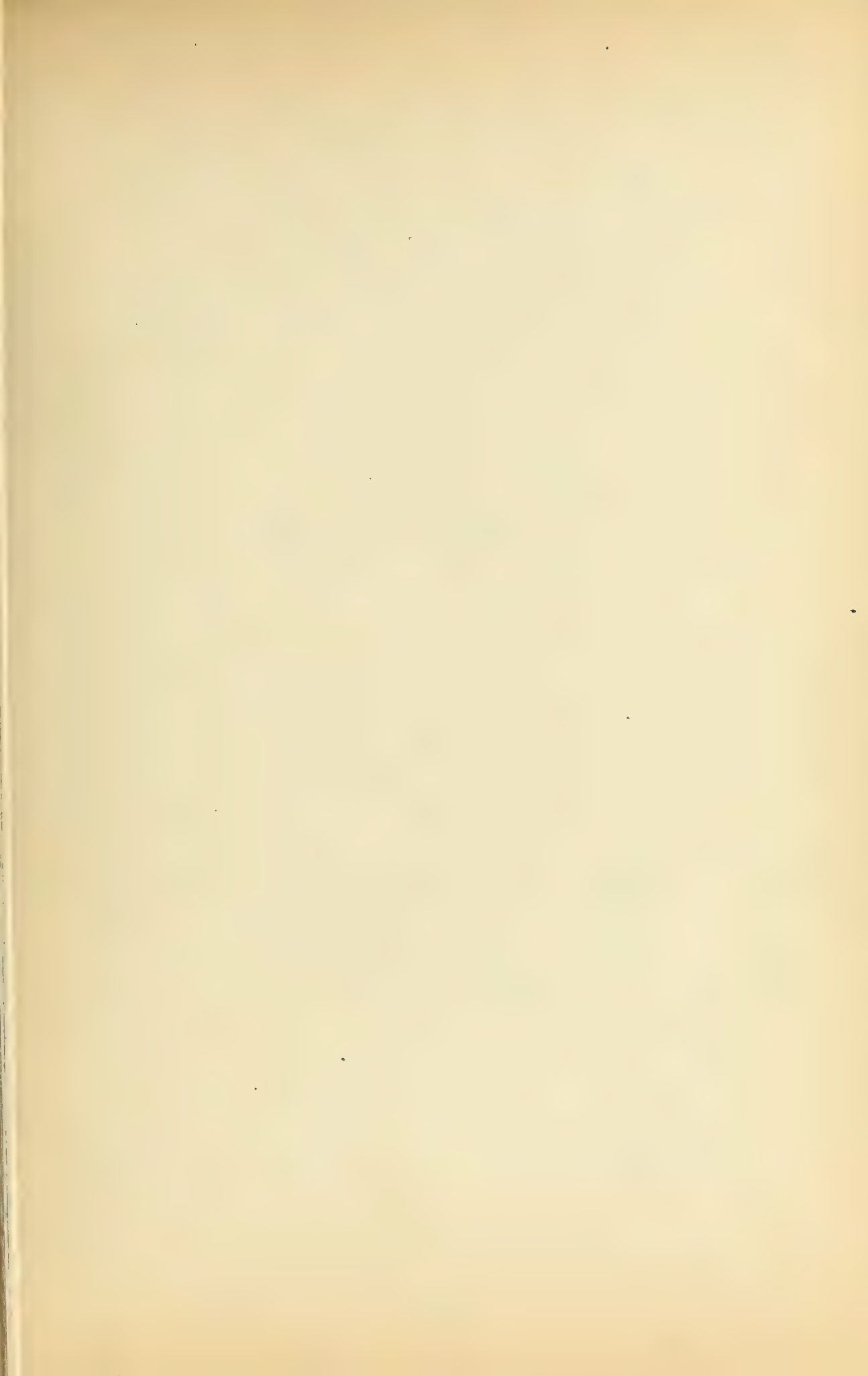
5. The combination of the roller-skate bearings $c' c' d d c^2 f$, the cushion-boxes b , and cushions H , the standards g , heads h , lugs $f' f' f^2$, the projections k , having the inclined surfaces k' , and the projections a' , having the concave recesses f^3 , substantially as and for the purposes described.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES E. FLAGG.

Witnesses:

H. A. DANIELS,
FRANK M. GREEN.



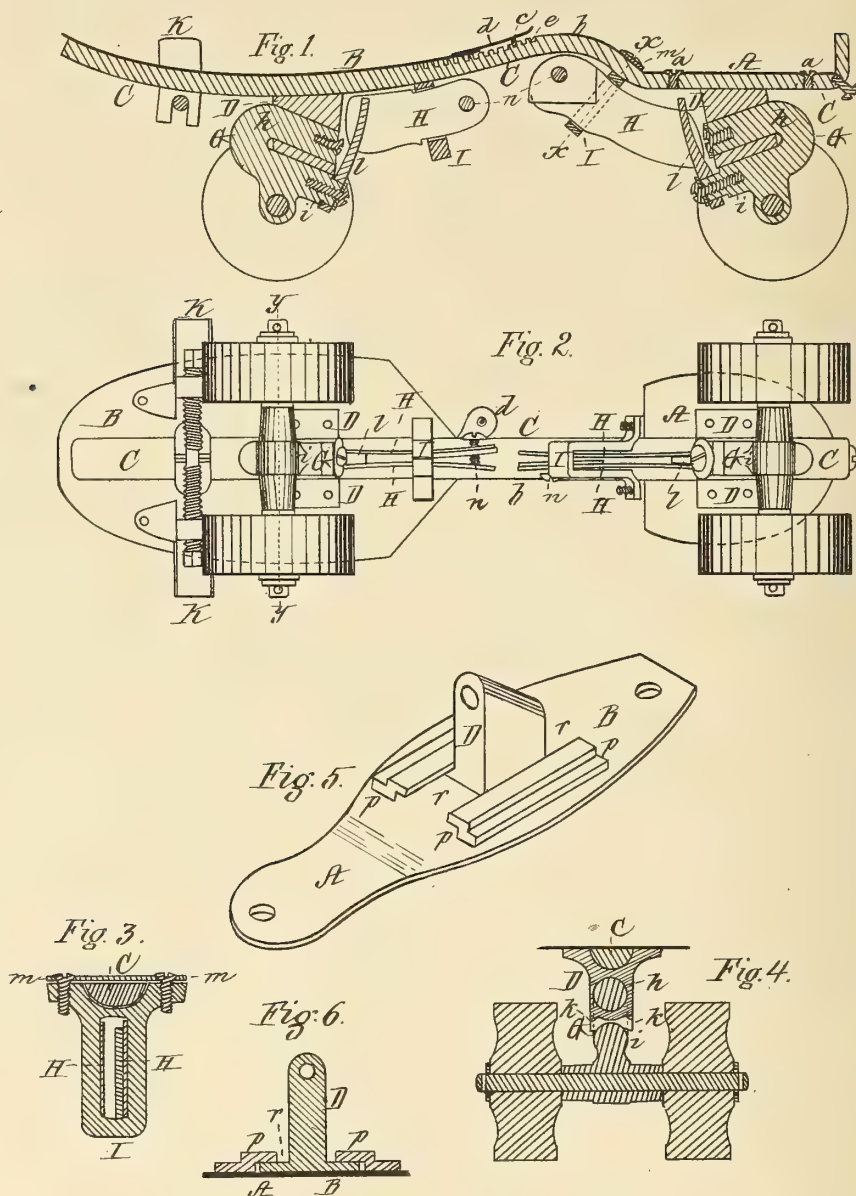
(No Model.)

L. L. RYERSON.

ROLLER SKATE.

No. 299,682.

Patented July 3, 1884.



Witnesses:
Benjamin S. Stokes
Jas. W. Chapman

Inventor:
Lucius Lorenzo Ryerson,
per Norman W. Stearns,
Att'y.

UNITED STATES PATENT OFFICE.

LUCIUS LORENZO RYERSON, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 299,682, dated June 3, 1884.

Application filed April 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, LUCIUS LORENZO RYERSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain

5 Improvements in Roller-Skates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1 is a vertical longitudinal section through the center of a roller-skate constructed in accordance with my invention. Fig. 2 is a plan of the under side of said skate. Fig. 3 is a section on the line *xx* of Fig. 1; Fig. 4, a

15 section on the line *yy* of Fig. 2; Fig. 5, a perspective view of the under side of a foot-support provided with ways, within which may be slid the bearing of one of the axles. Fig. 6 is a transverse section through the same.

20 One of the features of my present invention relates to an improved construction of the strengthening-rib secured to and extending under the foot-support of a roller-skate, said feature consisting of a solid rib secured to the

25 under side of the heel-plate, and turned up at its rear to serve as a heel-stop, and to which the heel-strap is secured, the rib being so formed that the portion thereof extending under the heel is located in a plane below the

30 portion of the same extending under the adjustable sole-plate, the middle or connecting portion of the rib upon which the shank rests serving as a support for the instep, the employment of said rib strengthening and re-en-

35 forcing the foot-support and preventing the bending of the same incident to that class of skates not so provided, while the adjustability of the parts admits of the skate being adapted for shoes of different lengths.

40 Another feature of this invention consists, in combination with a "goose-neck" journal and its bearing, of a pair of springs and an arm extending between them, and by which they are actuated, said arm being secured to the

45 goose-neck and partaking of the vibratory or rocking motion imparted thereto by the various changes in the position of the skater while in motion, the springs insuring the gradual yielding of the journals in their bearings as they depart from and return to their normal

50 position.

This invention also consists in a grooved or channeled way formed on the under side of the foot-support, for the reception and to admit of the sliding therein of the bearing of the axle of a pair of rollers, in order thereby to adapt the skate to feet of different lengths.

My invention also consists in a bracket for supporting the springs connected with the yielding goose-neck bearings, in combination with a means of adjusting the tension of said springs; and my invention also consists in a "clip" for securing the rear spring-supporting bracket to the under side of the longitudinal central rib.

In the said drawings, A represents the heel-support, B the support for the sole, and C a strong metallic rib, (of the form seen in Figs. 1 and 4,) securely attached by screws *a* to the under side of the heel-plate, and extending centrally and longitudinally therewith and across the space between it and the sole-plate and under the latter, the portion *b*, corresponding to the shank of the shoe, being located above the planes of the heel and sole plates.

75 D D are two bearings—one secured to the under side of the heel-support and the other to the under side of the sole-support—both bearings bridging over the central rib, C, and the sole-plate being adapted to slide on the latter to and from the heel-support, and when adjusted to the length of the foot of the skater being held fast by a pin, *c*, on a swinging plate, *d*, entering one of a series of holes, *e*, in the upper side of the rib. The bearings D D are for the reception of the cylindrical journals *h* of two inclined bent arms or goose-necks, G G, the lower bend, *i*, of each projecting outside of and under the lower surface of its bearing, which is provided with a raised lip, *k*, at each edge, the form of the bearing between its edges being concave or rounded outwardly in cross-section, Fig. 4. Secured to the inner lower end of each goose-neck is an arm, *l*, its upper end being interposed between the outer ends of two springs, H H, vertically located in one of two brackets, I I, one bracket being secured to the under side of the rear of the sole-plate, and the other bracket secured to the under side of the shank of the central rib by a clip, *m*, passing thereover at a point just beyond the front of the heel-plate. The inner ends of

each pair of springs are provided with an adjusting-screw, *n*, by which the tension of their outer ends is increased or diminished, by which construction the goose-neck journals are
 5 free to gradually yield and vibrate in their bearings against the resistance of the springs when the position of the skater is inclined in either direction, thus allowing the axes of both pair of rolls also to incline, and the bearing-
 10 surfaces of the rolls to rest squarely on the floor or pavement, the influence of the springs on the rolls admitting of their gradual departure from and return to their normal position.

K K are clamps, of well-known construction, for holding the skate upon the sole of the foot.

Another form of my invention which admits of the adjustment of a skate to feet of different lengths is shown in Figs. 5 and 6. In said figures the foot-support *A B* is represented as
 20 continuous from toe to heel, and is provided on its under side with a pair of parallel guides, *p*, forming a grooved way, *r*, in which the upper end of a bearing, *D*, is adapted to be slid.

I claim—

25 1. A strengthening-rib, *C*, secured to the under side of the heel-plate *A* and turned up

at its rear to serve as a stop for the heel, in combination with a sole-support, *B*, capable of adjustment upon said rib, for the purpose set forth.

2. A goose-neck axle-bearing and a goose-neck journal-bearing, with an arm, *l*, secured to the lower bend, *i*, of the goose-neck, in combination with a pair of springs, *H H*, and a holder or bracket, *I*, therefor, secured to the
 35 under side of a portion of the foot-support or around the central rib, as and for the purpose described.

3. A goose-neck, *G*, with an arm, *l*, projecting therefrom, in combination with a pair of
 40 springs located within a holder and having their tension regulated by an adjusting-screw, substantially as set forth.

4. A clip, *m*, extending over the rib *C*, in combination with and secured to a spring-
 45 holder, *I*, thereunder, substantially as and for the purpose specified.

Witness my hand this 14th day of April, 1884.

LUCIUS LORENZO RYERSON.

In presence of—

N. W. STEARNS,
 BENJAMIN S. STOKES.

(No Model.)

B. KINDBLADE.

ROLLER SKATE.

No. 299,799.

Patented June 3, 1884.

FIG. 1.

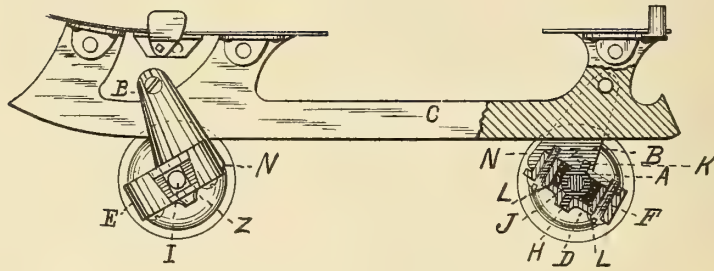


FIG. 2.

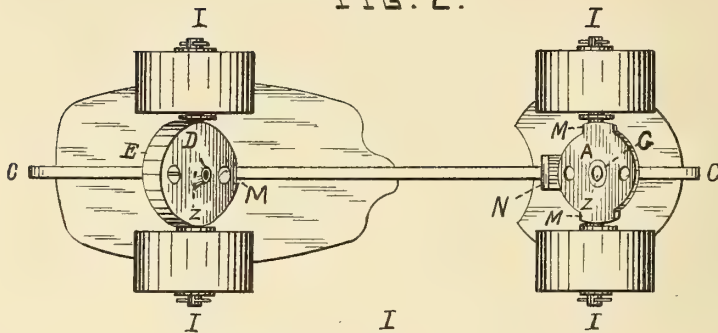


FIG. 3.

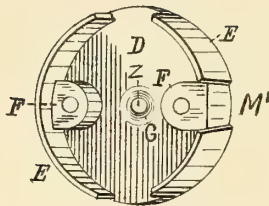
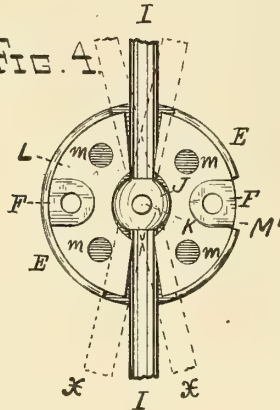


FIG. 4.



WITNESSES:

A. G. Morey.
B. J. Morey

INVENTOR

Bennett Kindblade.

BY

J. L. Chapin.

ATTORNEY

UNITED STATES PATENT OFFICE.

BENNETT KINDBLADE, OF BATAVIA, ILLINOIS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 299,799, dated June 3, 1884.

Application filed March 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, BENNETT KINDBLADE, of Batavia, in the county of Kane and State of Illinois, have invented new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had to the accompanying drawings, in which like parts in the different figures are marked with like letters of reference.

The present invention relates to an improvement in that class of skates which run on pairs of rollers in contradistinction to ice-skates which run on runners.

The especial invention consists in novel means for giving to the rollers oblique movements, both with reference to horizontal and vertical planes of the foot-plate. These movements are essential to the proper movement of the skate, and they are attained in various ways and on different principles, among the most practical of which are the caster-rollers, whose diverging movements are attained by the connections which hold the caster-frames to the foot-plate, and in many styles of skates the axle-trees of the wheels are provided with hole-bearings, which receive king-bolts projecting diagonally down from the foot-plate. I therefore disclaim to have any invention in skates where the king-bolts or pivots pass through the axle-trees, or whose caster-frames are pivoted to the foot and support the rollers.

Figure 1 is an elevation of an ice-skate with my improved roller device attached; Fig. 2, an inverted view of a foot-plate with the improved devices attached thereto; Fig. 3 a perspective representation of the box-plate removed from the upper stationary plate; Fig. 4, a plan view of the box-plate with the rubber cushions therein, and the axle-tree in position and detached from the upper plate.

The upper plate, A, to the axle-case is substantially circular in form, and is a part of the casting which forms the shank B, and the shank is slotted out vertically to engage the runner C, where the device is to be attached to an ice-skate.

The box-plate to the axle-box consists of a disk, D, two segment-flanges, E, screw-lugs F F, and a bearing, *z*. The axle consists of arms I I, and a ball-center, J, which is formed with pivots H K on its opposite sides, to enter, re-

spectively, suitable bearings in the plates A D. To give to box-plate D a proper bearing on the plate A and shank B, a lug, N, extends down from the shank, and engages a groove, M', in one of the segment-flanges E and the upper plate, A, and the upper plate, A, has formed on its opposite edges segment projections M, which fit in between the flanges E, leaving a depth between the plates A D for the axle-arms freely to swing. A rubber spring, L, is placed on both sides of the axle-arms I and ball J, and inside the flanges E, and made nicely to fill the parts and come as high as or higher than the upper sides of the lugs F, so that when the upper plate, A, is in position on the box-plate, the rubber will be somewhat compressed laterally, the better to act on the arms I I.

In practice the upper and lower parts of the ball J are to be recessed into the plates A D far enough to bring them to the arms I I, and thus hold them in position to swing to the positions shown by dotted lines *x*, Fig. 4—that is, to swing between the flanges E, which govern the oblique movement of the axle. Where an easier movement of the axle is desired holes *m m* may be made through the rubber, as shown at Fig. 4. By this means of construction the axle can be readily removed simply by detaching the plate D.

Coil-springs may be used instead of the rubber to operate the arms I I; but I prefer rubber for the reason that they fill the spaces between the flanges E and axle.

The advantage of this device is that the movement is all within the case A D E, where the parts are so cushioned that there is no liability of lost motion or rattling of parts; and as the ball J is supported both by the pivots H K, and the seats G, which the ball has in the plates A D, there is no liability of the axle being displaced by any movement it may have.

Where the cases A D are to be attached to a foot-plate instead of an ice-skate, the shank B may terminate in any form at its upper end convenient for receiving rivets to secure them in place.

I claim and desire to secure by Letters Patent—

1. An axle-pivot for roller-skates, consisting of the ball J, rigidly attached to the arms I I, and provided with pivots H K, which

have bearings z z , respectively, in the plates A D, and the ball J, having concave seats G in said plates, as and for the purpose specified.

2. In an improvement in roller-skates, the case consisting of the plates A D, the plate D, provided with the segment-flanges E E, screw-lugs F F, concave bearings z , in combination with the ball-axle J I I, and rubber L, as specified.

3. In roller-skates, the two-plated case A D, with the lugs F, countersunk to the thickness of the plate A below the upper margins of the flanges E, to allow plate A to come down

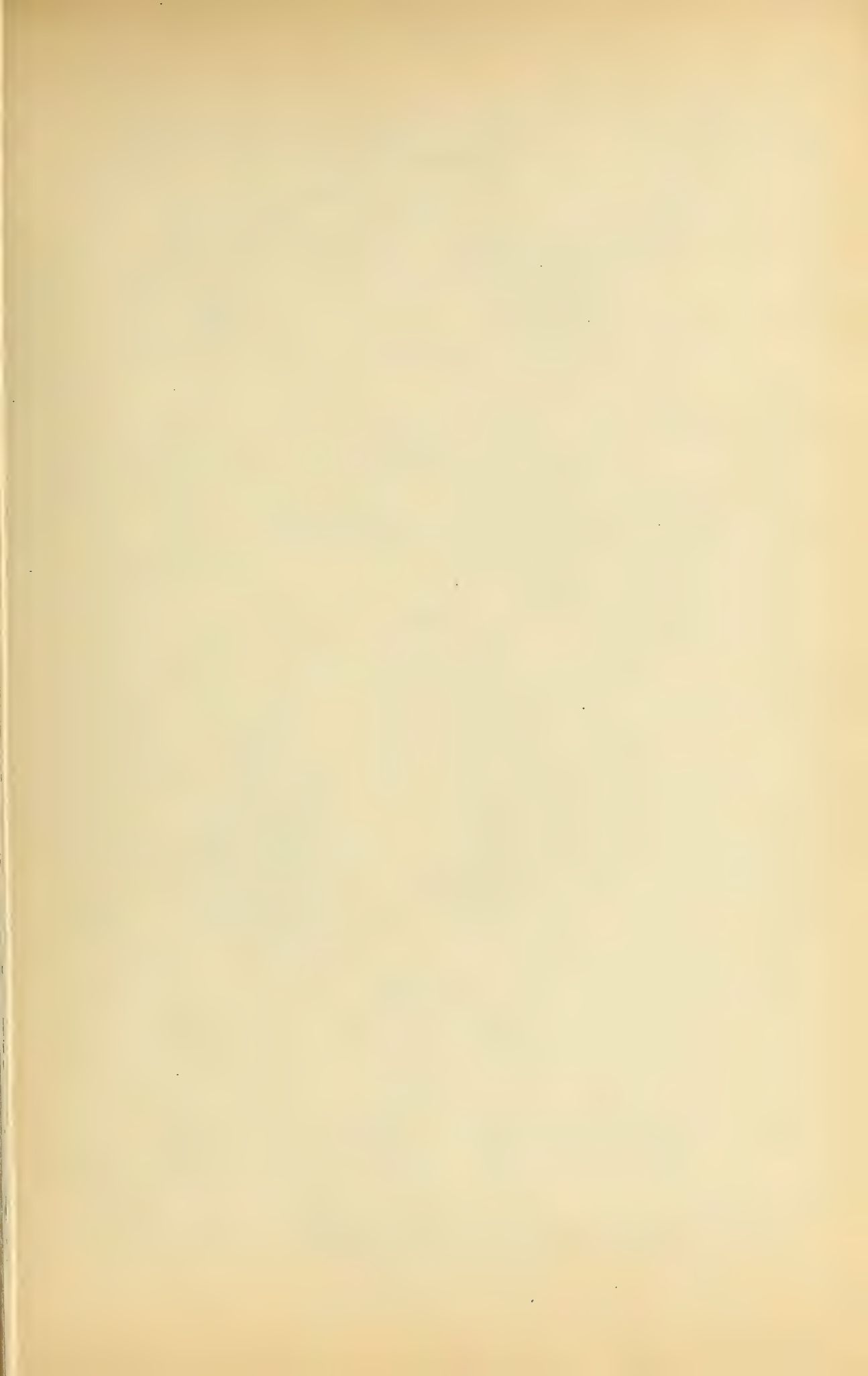
to the arms I I, and the lug N, projecting down from the plate A and engaging the groove M' in one of the flanges E, to assist in preventing the plate D from rotating, as specified.

4. In roller-skates, the case A D, combined with the shank B, to form an attachment to a skate-runner or the foot-plate of a skate, as specified.

BENNETT KINDBLADE.

Witnesses:

CLAYTON D. WALWORTH,
HORACE N. JONES.



(No Model.)

H. A. WILBUR.
ROLLER SKATE.

No. 300,745.

Patented June 17, 1884.

FIG. 1.

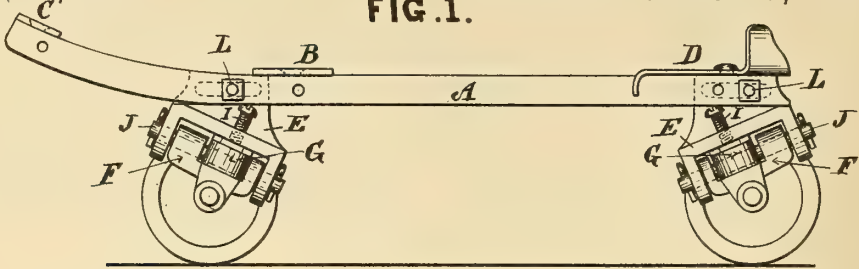


FIG. 2.

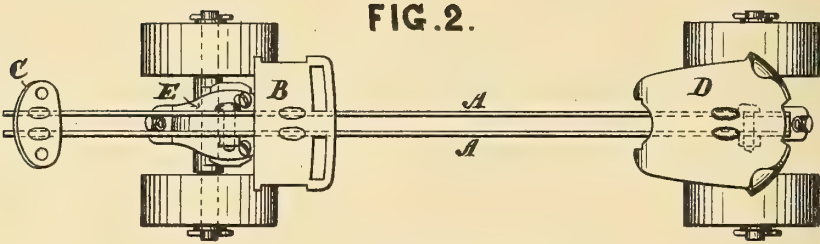


FIG. 3.

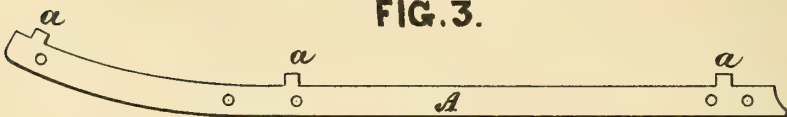


FIG. 4.

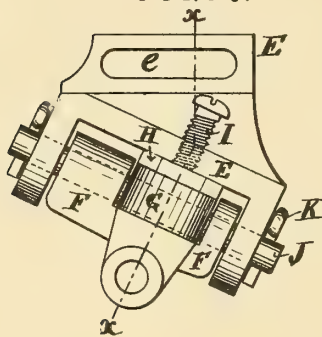


FIG. 5.

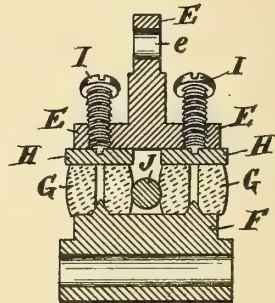


FIG. 6.

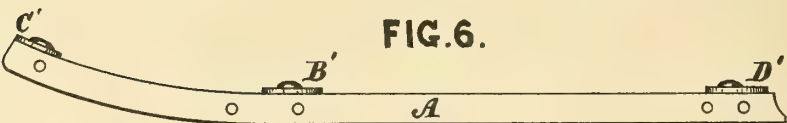


FIG. 7.

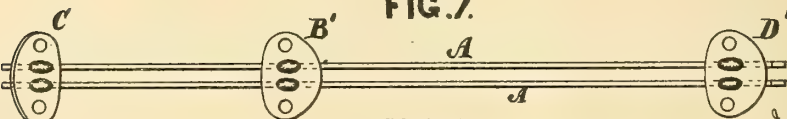
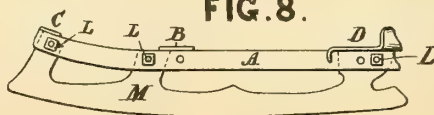


FIG. 8.



Witnesses.
E. Blanta
Thomas F. Currier.

Inventor.
H. A. Wilbur
by J. H. Adams
Attorney

UNITED STATES PATENT OFFICE.

HENRY A. WILBUR, OF WEST SOMERVILLE, ASSIGNOR OF ONE-HALF TO
FRANK W. LOWE, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 300,745, dated June 17, 1884.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WILBUR, a citizen of the United States, residing at West Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to an improved means for adapting the frame of a roller-skate to an ice-skate, and also to a means for adjusting the elastic bearings, so as to compensate for the wear of the rollers in roller-skates.

Referring to the accompanying drawings, Figure 1 is a side view of a roller-skate embodying my invention. Fig. 2 is a top or plan view of the same. Fig. 3 shows one of the sides of the frame as cut or cast. Fig. 4 is a side view of the hanger and bearings. Fig. 5 is a section of the same on the line *xx*. Figs. 6 and 7 show a means for adapting the frame to a wooden bottom of an ice or roller skate. Fig. 8 shows the frame as adapted to an ice-runner.

A A represent the frame, composed of two plates of metal cut out from a sheet, or cast, as shown in Fig. 3, with the tangs *a a a*.

B is a bridge-plate for supporting the sole-plate, and C is a toe-plate bracket, each being firmly secured to the frame A A, and D is the heel-plate attached to the frame A A.

E is a hanger in which is supported the journal-bearing and the elastic springs G G. In the upper part of the hanger E is a slot, *e*, as shown. The hanger E is inserted in the space between the two plates A A, and is secured therein by means of a bolt and nut, as shown at L. By means of the slot *e* the hanger E, together with the rollers and their bearings, may be adjusted to boots or shoes of different sizes to the extent of the length of the slot. Within the hanger E is hung, by means of a pin, J, the journal-bearing F, that carries the axles of the rollers. In a recess in the bearing F are placed two rubber blocks, G G, on the upper ends of which are placed washers H H.

I I are screws which pass through projecting sides of the hanger E and bear upon the

washers H, by which means either of the rubber blocks may be more or less compressed as required to compensate for the wear of the rollers.

In the use of roller-skates in skating-rinks it is found that the rollers on one side of the skate are liable to become much more worn away than those on the other side, owing to various causes. In such case the rollers become useless and new rollers have to be provided. By means of compressing either of the rubber blocks or springs, as above described, I obviate the difficulty occasioned by the wearing away of the rollers on one side of the skate by evening up or depressing one side, to compensate for the wear.

The springs G G, instead of being made of rubber, as shown, may be of coiled wire or any other suitable elastic material.

More than two parallel bars, A A, may be employed, if found desirable.

The toe-plate bracket C, bridge-plate B, and heel-plate D are secured to the plates or frame A A by means of the tangs *a a a*, which are riveted to the said plates.

When an ice-skate is required, it is only necessary to take out the bolts L and remove the hangers E E, and then insert the projections on upper edge of the skate-iron M, using the same bolts and nuts as employed in the roller-skate, as indicated in Fig. 8.

What I claim as my invention is—

1. The frame A A, composed of two metal plates having a space between, in combination with a hanger capable of being adjusted lengthwise of the frame, as and for the purpose set forth.

2. The adjustable springs G G, arranged one on either side of the hangers E, in combination with the bearings F, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY A. WILBUR.

Witnesses:

JOSEPH H. ADAMS,
E. PLANTA.

(No Model.)

F. A. BAILEY.

ROLLER SKATE.

No. 301,041.

Patented June 24, 1884.

Fig. 1.

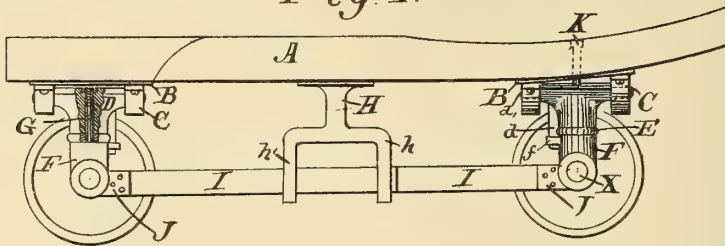


Fig. 2.

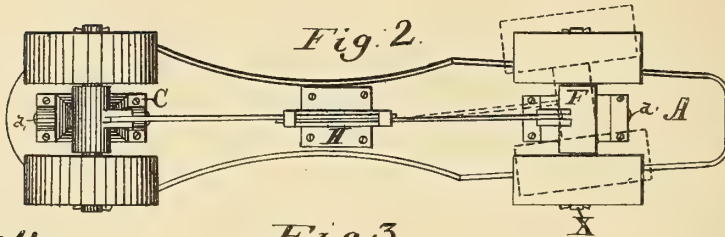


Fig. 4.

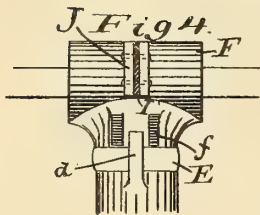
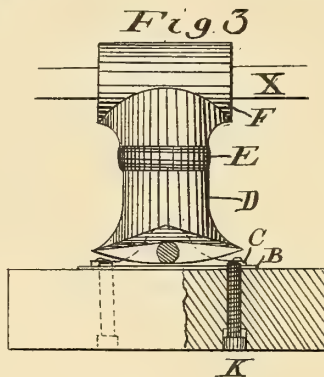


Fig. 3.



Witnesses:

C. E. Sturtevant.

E. W. Roberts.

Inventor:

Fred A. Bailey
by S. W. Bates
his atty.

UNITED STATES PATENT OFFICE.

FRED A. BAILEY, OF OAKLAND, MAINE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 301,041, dated June 24, 1884.

Application filed April 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRED A. BAILEY, a citizen of the United States, residing at Oakland, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to roller-skates; and the object of my invention is to do away with rubber springs and to substitute therefor straight longitudinal steel springs of such form that they will be subjected to little wear and may easily be made with different degrees of stiffness. I accomplish this result by means of the arrangements shown in the accompanying drawings, in which—

Figure 1 shows side elevation of skate. Fig. 2 is a bottom view of same. Fig. 3 is a view of rear truck, looking to the front. Fig. 4 is a front view of same.

A is the foot-plate of the skate, attached to the under side of which are the forward and rear trucks in their usual positions. These trucks are alike in their construction and operation.

B is a plate, on each end of which are the journal-boxes C, through which screws pass, securing the plate B to the wood. The hanger D is hung by journals *d d'* to the boxes C C.

F is the hub through which pass the axles X X, which contain the rolls. The hub F is joined to the hanger D by the rod G, with a nut on its upper side. The rod G forms an axis about which the hub F is free to move.

E is a rubber washer placed between the hub F and hanger D. Two spurs, *ff*, project from the upper part of the hub F, while a stop, *d*, is cast in the hanger D, and plays between the spurs *f*. Half-way between the trucks is the bifurcated standard H, having the two arms *h* and *h'*. Through slots in these arms pass two straight springs, I I. One end of each spring is secured to one of the trucks, while the opposite ends overlap each other, both passing through the arms *h* and *h'*, as described. The screws K K pass through the foot-plate of the skate and project underneath on each side of the hanger D in such a manner that when the hangers turn in their bear-

ings the motion of the hangers will be stopped by the ends of the screws K K.

Having thus described the construction of my skate, I now proceed to explain its mode of operation. When one side of the skate is pressed, the lower end of the truck is thrown one side of the center of the skate, as shown by the dotted lines in Fig. 2. The motion takes place about the bearings *d d'* of the hanger D. As the rolls are thus thrown over the hub F is made to swing around at an angle with the center line of the skate, turning on the axis G by the action of the spring I, one end of which remains fast to the standard H, while the other end swings with the truck. As soon as the truck is moved to one side the tension of the spring I begins to be felt, and as soon as pressure on the skate is removed the spring I brings the truck again into line with the center of the skate. When it is desired to limit the motion of the trucks, the screws K are raised or lowered, and are thus made to stop the hangers at any desired inclination. The stop *d*, playing between the spurs *ff*, serves to prevent the hub F from turning beyond a fixed point, and so breaking the spring I. The springs I may be attached to the hub F with bolts and nuts, which may be readily removed, and the springs thus changed.

It is designed to manufacture springs of varying stiffness, so that different tastes may be suited in this respect.

Instead of two overlapping springs, I may have one horizontal spring, each end secured to one of the hubs, and the middle secured by the standard.

In place of one bifurcated standard, I may use two single standards, in which case, by moving each from or toward the truck, I can govern the sharpness of the curvatures of the truck when pressed to one side.

It is evident that by the use of long straight springs I am able to line the trucks more carefully, and the springs themselves act with more delicacy and certainty than by the use of rubber springs.

I claim—

1. In a roller-skate, the combination of the hanger D and hub F, having between them

the rubber washer E, with the horizontal overlapping springs I I and the bifurcated standard H, substantially as shown and described.

2. In a roller-skate, the combination of the
5 standard H, springs I, hub F, and hanger D, with the regulating-screws K K, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

FRED A. BAILEY.

Witnesses:

S. W. BATES,

C. E. STURTEVANT.

(No Model.)

O. N. LLOYD.

ROLLER SKATE.

No. 301,376.

Patented July 1, 1884.

Fig:1.

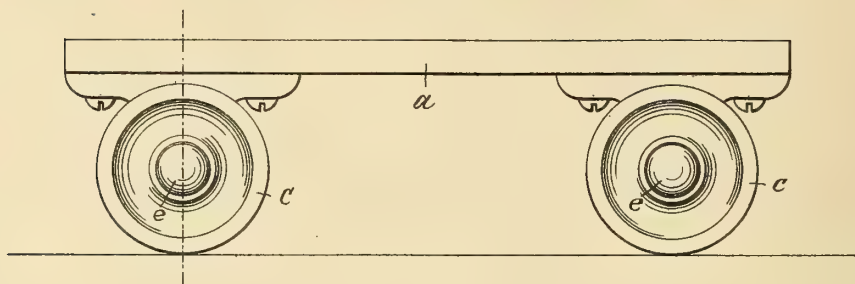


Fig:2.

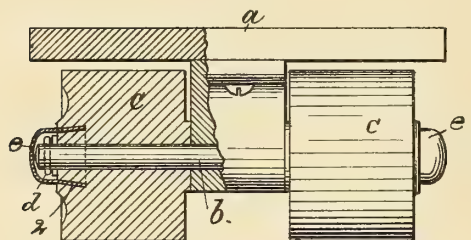


Fig:3.

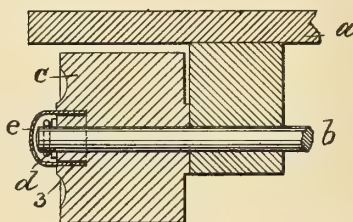


Fig:4.

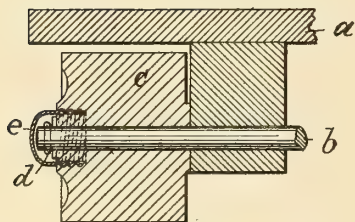
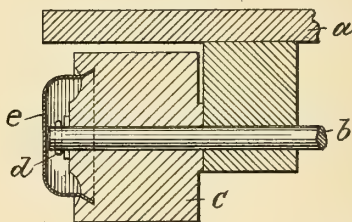


Fig:5



Witnesses.

Arthur Lippert.
John F. C. Brinkert.

Inventor.

Oliver N. Lloyd.
by Crosby & Gregory attys.

UNITED STATES PATENT OFFICE.

OLIVER N. LLOYD, OF CHELSEA, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO FRANKLIN P. BAKER, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 301,376, dated July 1, 1884.

Application filed October 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, OLIVER N. LLOYD, of Chelsea, county of Suffolk, State of Massachusetts, have invented an Improvement in Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The rollers of roller-skates as commonly made are mounted on the ends of spindles passing wholly through the rollers, and provided with cross-pins at their outer ends, to prevent the rollers from coming off. The oil used to lubricate the rollers thus has an opportunity to escape at the ends of the spindles, and is thrown off by the centrifugal force and spattered by the shocks and jars of the rollers, thus soiling the clothing of the wearer.

The present invention has for its object to relieve the skates of this objection; and it consists in the combination of a roller of a roller-skate with a protecting cap connected with the roller and inclosing the end of the spindle, so as to prevent the escape of oil, thus protecting the clothing, and also producing a better finish at the hub portion of the roller, it covering the projecting end of the spindle, and also constituting a receptacle to contain a sufficient amount of oil to lubricate the roller for a considerable length of time. The cap may be constructed and connected with the roller in a variety of ways, several of which are hereinafter described.

Figure 1 is a side elevation of a roller-skate embodying this invention; and Figs. 2 to 5, inclusive, vertical sections of a roller and portion of the skate, showing various modifications in the construction and manner of applying the protecting-cap.

The foot-board *a*, spindle *b*, and rollers *c* thereon may be of any suitable or usual construction, the said spindles passing wholly through the rollers, and being provided with washers and pins, as shown at *d*, to secure the rollers thereon, in the usual manner.

In order to prevent oil from escaping around the spindles *b* at their outer ends and passing onto the outer surface of the rollers, and thence to the clothing of the wearer, the rollers are provided with protecting-caps *e*, which inclose

the ends of the spindles or axles *b*, and are preferably made detachable, to enable the rollers to be lubricated at their outer ends. The said caps *e* may be connected with the rollers *c* in various ways. As shown in Fig. 2, the roller *c* is provided with a deep groove, 2, concentric with the spindle, the said groove being somewhat conical or inclined with relation to the axle of the roller, so that when the cap *e* is inserted its end will be caused to flare out somewhat, binding tightly upon the material of the roller, so as to be held firmly in place and prevent the escape of oil between it and the said roller, the cap being preferably made of ductile metal, such as malleable brass.

As shown in Fig. 3, the groove 3 in the roller is cylindrical or parallel with the axle, and the cap *e* merely fits tightly therein. As shown in Fig. 4, the groove in the roller and the edge of the cap are correspondingly screw-threaded, so that the cap may be screwed into place. In the modification shown in Fig. 5 the construction is substantially the same as shown in Fig. 2; but the cap is much larger, its holding-groove in the roller being at a greater distance from the axle, so that the cap forms a receptacle of considerable size for lubricating material.

As I am not the first to provide a covering for the end of the axle of a roller-skate, I do not broadly claim such a covering.

I claim—

1. The roller provided with a groove in its outer face, combined with a cap, fitted and thereby held in said groove to cover the end of the axle or spindle of the roller, substantially as described.

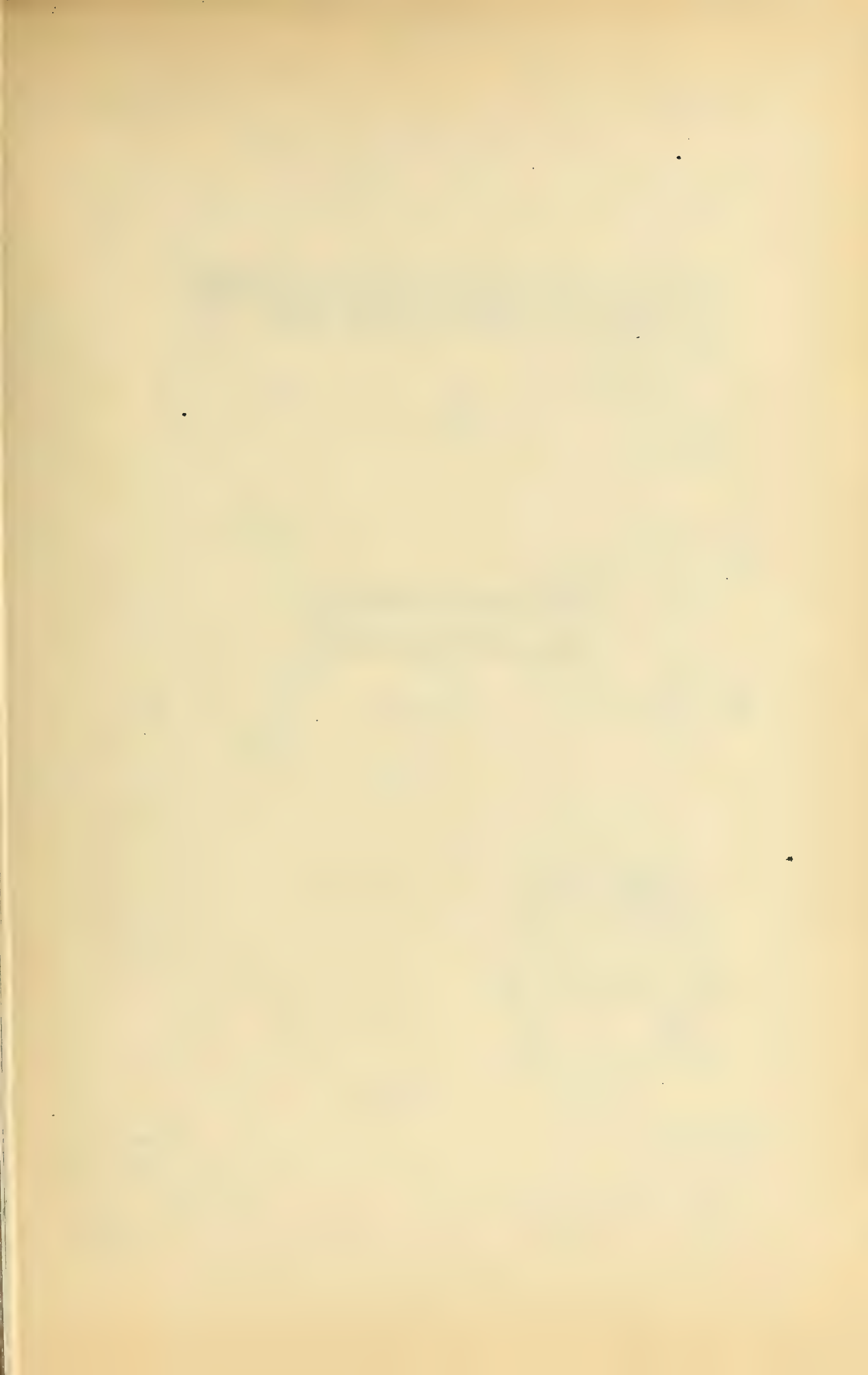
2. The combination of the roller, provided in its outer face around the axle-hole with a flaring groove, and a cap frictionally held in said groove, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OLIVER N. LLOYD.

Witnesses:

JOS. P. LIVERMORE,
W. H. SIGSTON.



(No Model.)

2 Sheets—Sheet 1.

A. OVERHOLT.

ROLLER SKATE.

No. 301,515.

Patented July 8, 1884.

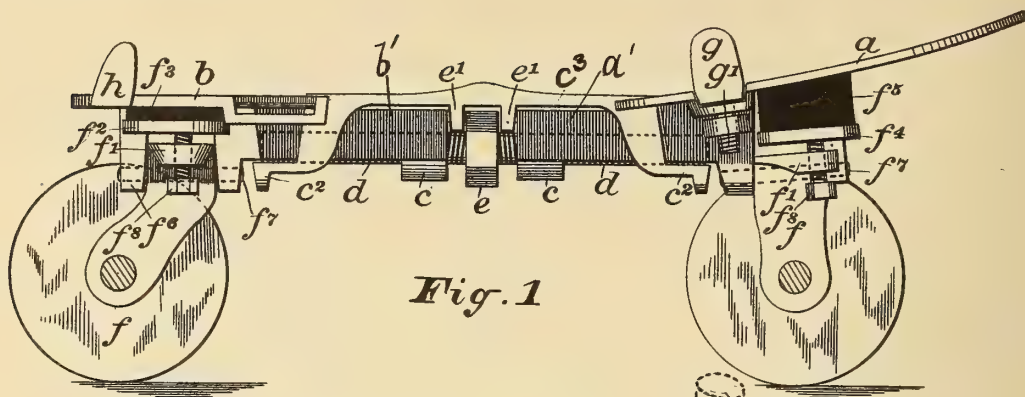


Fig. 1

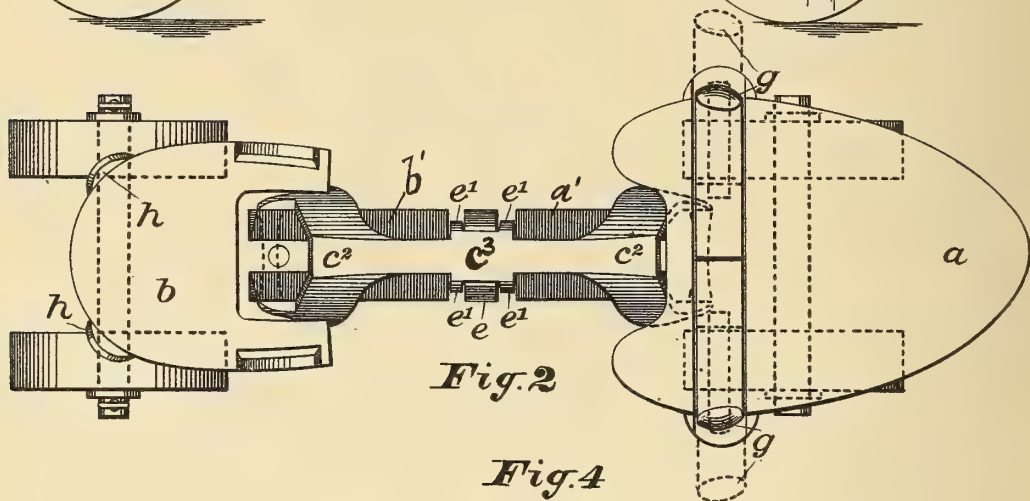


Fig. 2

Fig. 4

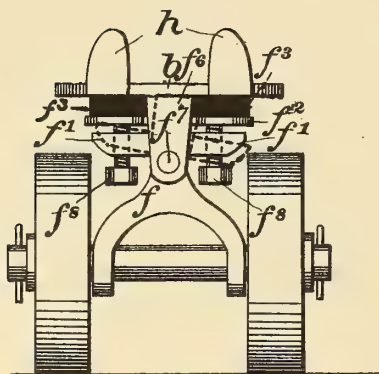


Fig. 3

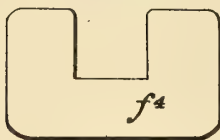
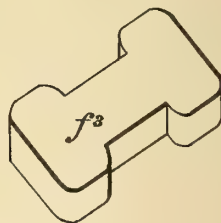


Fig. 6



Fig. 5

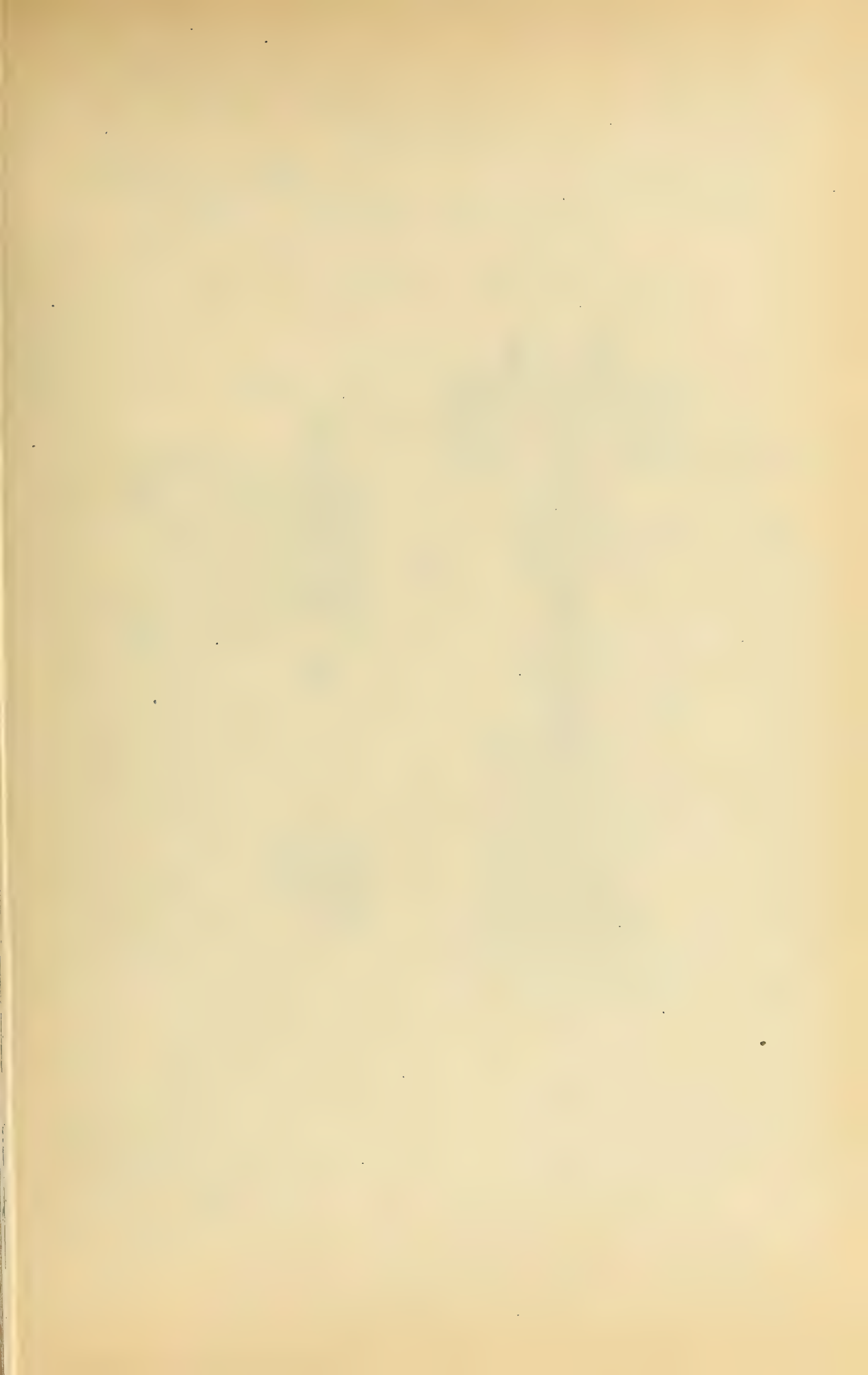


Witnesses;

L. F. Cummings
D. L. Smith

Inventor

Abraham Overholt
per Wm Zimmerman
Attorney



A. OVERHOLT.

ROLLER SKATE.

No. 301,515.

Patented July 8, 1884.

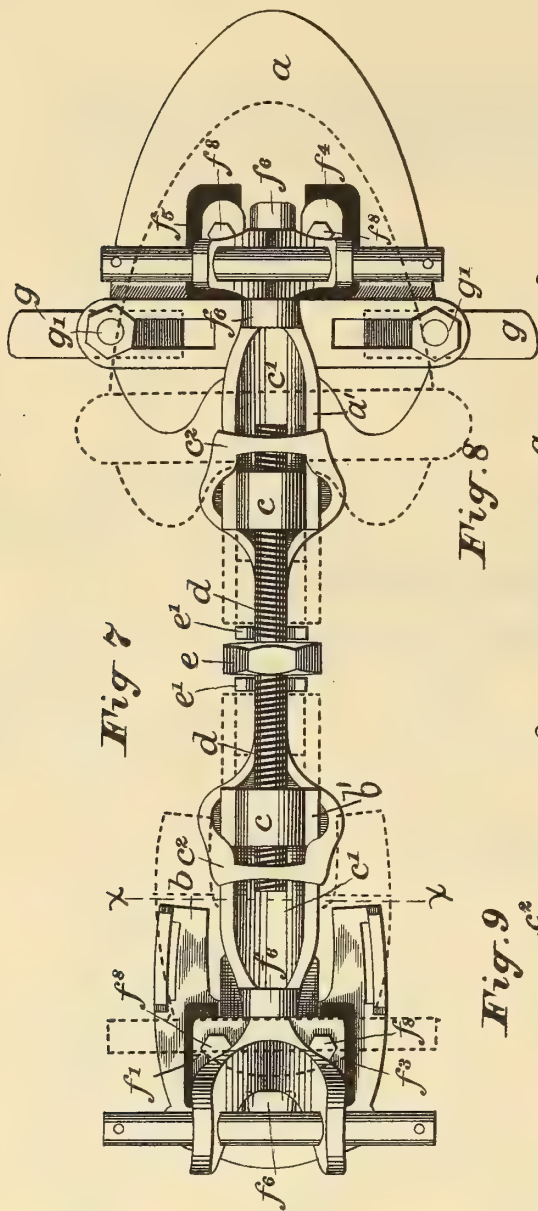


Fig. 7

Fig. 8

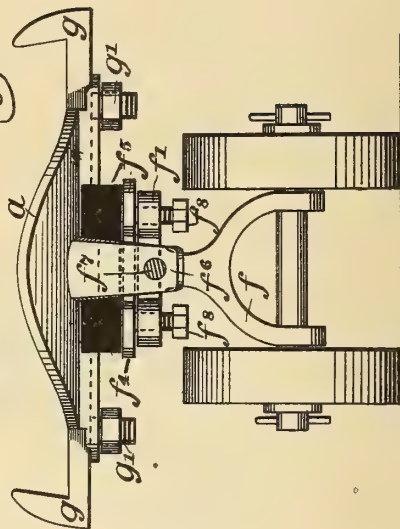


Fig. 9

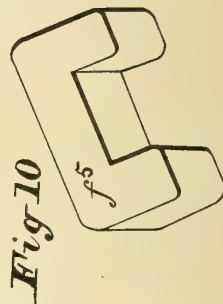
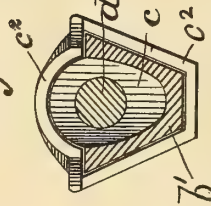


Fig. 10

Witnesses:
L. F. Cummings
B. F. Smith

Inventor
Abraham Overholt
per Wm Zimmerman
Attorney.

UNITED STATES PATENT OFFICE.

ABRAHAM OVERHOLT, OF WAUPUN, WISCONSIN.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 301,515, dated July 8, 1884.

Application filed May 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM OVERHOLT, a citizen of the United States, residing at Waupun, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Roller-Skates, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a side elevation of my skate. Fig. 2 is a plan view from the top. Fig. 3 is an end view from the rear, showing motion of plates f' . Fig. 4 is a plan view of the plate f^4 . Fig. 5 is a plan view of the plate f^2 . Fig. 6 is a perspective view of the rubber f^3 . Fig. 7 is a plan view of the under side of the skate, showing extended and contracted positions of heel and toe plates. Fig. 8 is a front view of the skate. Fig. 9 is a cross-section on the line $x x$ of Fig. 7. Fig. 10 is a perspective view of the front rubber, f^3 .

Like letters of reference indicate like parts. The object of my invention is to make a roller-skate that shall be adjustable longitudinally, and in which the bearings shall have a limited side motion regulated by screws and rubber cushions, substantially as shown.

The skate is made of a front part, a , having a piece, a' , integral with it, and a rear part, b , with a part or piece, b' , integral with it. Said parts are held together by an independent piece or bridge, c^3 , having loops c^2 at its ends, in which freely slide the parts $a' b'$. Near the center of the piece c' are prongs e' , on each side, which hold between them a nut, e , fixed to the center of a shaft, d , on which are cut right and left hand screw-threads. Said screw enters into the nuts e , fixed into and forming the end of the channel-like parts $a' b'$, and lies or works freely in the channel c' . By turning said nut e , and thereby the screw

d , the parts $a' b'$ will be moved to or from the nut e , and thus separate or bring together the parts $a b$.

To the heel-plate b are cast, integral therewith, spurs or guards h , and slots for a strap, and to the toe-plate a are attached adjustable spurs g , which have a blade which slides in a channel, and a fixed bolt which slides in a slot through the plate a , and to which is attached a nut, g' , by means of which each spur is secured in its place. Said spurs hook inward, so that when set they will catch the sole of the boot, when pushed into it longitudinally, and hold securely without further trouble.

The standards or carriers f play on pins f^7 , which pass through lugs f^6 , attached to the heel and toe plates. The carriers f have above the pins f^7 horizontal plates f' , integral with them, through which, near their outer longitudinal edges, pass set-screws f^3 , against plates $f^2 f^4$, and said plates carry rubber blocks f^3 , which press against the plates a and b . Said rubber blocks yield to lateral pressure of the carriers f , and by means of the screws f^3 more or less resistance may be given said parts.

What I claim is—

1. In a roller-skate, the combination of the parts $a b$, having attached to them parts $a' b'$, united by a bridge-piece, c^3 , and adjusting-screws d , substantially as specified.

2. In a roller-skate, the combination of the parts $a a' b b'$, with bridge-piece c^3 , having loops c^2 , and screws d , provided with nut e , and spurs e' , substantially as specified.

3. In combination with the adjustable plates $a b$, bridge-piece c^3 , screws d , nut e , and spurs e' , the spurs h , and adjustable spurs g , substantially as specified.

ABRAHAM OVERHOLT.

Witnesses:

F. W. MOORE,
CH. DOLL.



(No Model.)

J. S. RICHARDSON.

ROLLER SKATE.

No. 301,522.

Patented July 8, 1884.

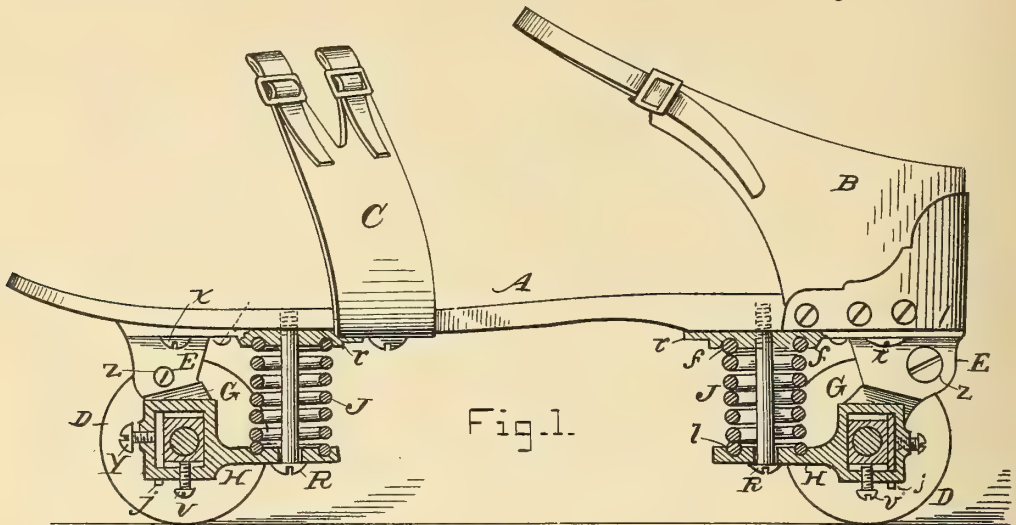


Fig. 1.

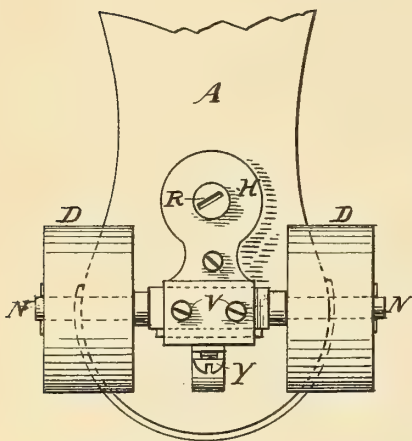


Fig. 2.

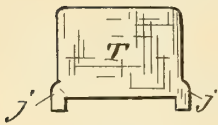


Fig. 5.

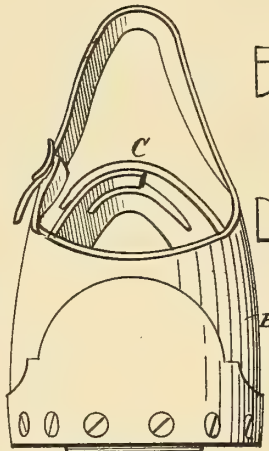


Fig. 3.

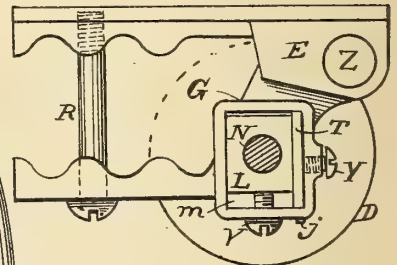


Fig. 4.

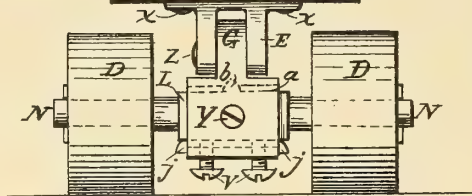


Fig. 6.

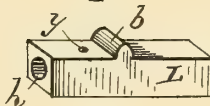


Fig. 7.

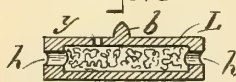


Fig. 8.

Witnesses.

N. C. Rennie
L. J. White

Inventor.

John S. Richardson

Per C. A. Shaw,
Att'y.

UNITED STATES PATENT OFFICE.

JOHN S. RICHARDSON, OF LOWELL, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 301,522, dated July 8, 1884.

Application filed May 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. RICHARDSON, of Lowell, in the county of Middlesex, State of Massachusetts, have invented a certain
5 new and useful Improvement in Roller-Skates, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which
10 said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved skate, certain portions being shown in section; Fig. 2, a bottom plan view of the heel; Fig. 3, a rear end elevation; Fig. 4, a sectional side elevation; Fig. 5, a view of the plate detached; Fig. 6, a sectional view showing the plate in position; Fig. 7, an isometrical perspective view of the journal-box detached, and
20 Fig. 8 a vertical longitudinal section of the same.

Like letters of reference indicate corresponding parts in the different figures of the drawings.
25

My invention relates exclusively to the class of skates known as "roller-skates;" and it consists in a novel construction and arrangement of the parts, as hereinafter fully set forth and
30 claimed, by which a more desirable and efficient article of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following
35 explanation.

In the drawings, A represents the body of the skate; B, the heel-strap; C, the toe-strap; D, the rollers or trucks, and N the axle, all of
40 these parts being constructed of any suitable materials and in the usual form. A bifurcated bracket, E, is secured to the under side of the heel portion of the body A by the screws *x*, said bracket being extended forward to form
45 the plate *r*, which is provided on its lower side with the socket or groove *f*.

Disposed beneath the bracket E there is a double-armed lever, G, one of its arms being pivoted in the forks of said bracket at *z*, and the other extending forward and terminating
50 in the plate H, which is provided on its upper

side with the groove or socket *l*, and corresponds with the plate *r*, arranged immediately above it. A stout coiled spring, J, is disposed between the plates *r* H, its upper end resting
55 in the socket *f* and its lower end in the socket *l*, the spring acting expansively to force the plates apart, and being held in position by the screw R, which passes upwardly through
60 a slot, *i*, in the plate H, and is screwed into the plate *r* and body A. The central portion of the lever G is enlarged, and preferably formed square, and is provided with a square
65 hole or mortise, *m*, extending entirely through it from side to side. Disposed in this mortise there is an axle-box, L, provided with a hole,
70 *h*, for receiving the axle N, and a chamber, *y*, for holding cotton-waste or any other suitable material for absorbing and retaining the oil with which the axle is lubricated. A trans-
75 versely-arranged knife-edge flange or fulcrum, *b*, projects from the upper side of the box L, said flange fitting into a corresponding notch or groove, *a*, in the top or ceiling of the mortise *m*.

Passing upwardly through the bottom of the lever G into the mortise *m* there are two screws, *v*, adapted to force the box L upwardly in said mortise and keep the fulcrum or flange
80 *b* in the groove *a*. The fulcrum *b* is higher than the depth of the groove *a*, so that the box may be racked or tilted longitudinally when the screws *v* are properly adjusted, the
85 screws preventing the fulcrum from escaping from the groove. The box L is somewhat narrower than the width of the mortise *m*, and to keep it properly in place and compensate
90 for any wear that may occur in use a plate, T, is employed, which is placed at one side of the box in the mortise and prevented from
95 escaping by a lip or overhanging projection, *j*, at either end, the plate being provided with a set-screw, Y, for forcing it against the box L. The screws *v* are not turned in to the fullest extent when the skate is in use, but
100 only as far as may be necessary to prevent the fulcrum or flange *b* from escaping from the notch or groove *a*, and at the same time permit the body of the skate to be rocked laterally on said fulcrum, as desired.

The lever G is so constructed and arranged that a vertical line drawn through its pivotal

support or center of motion at z , when the body A is in a horizontal position, will pass at one side, or a short distance to the rear, of the central axial line of the rollers or trucks D, so that when the skate is in use the pressure at the heel of the same will be divided between the pivot z and spring J, in a manner which will be readily obvious without a more explicit description.

The description given of the bracket E, lever G, spring J, and their immediately-connected parts at the heel of the skate also applies to corresponding parts disposed at the toe of the skate, but arranged in reverse order, the plate r of the bracket E and the plate H of the lever G at the heel of the skate projecting toward the toe of the body A, and the plate r of the bracket E and plate H of the lever G at the toe of the skate projecting toward the heel, as shown in Fig. 1. The object of the springs J is to yieldingly resist the approach of the rollers toward the body A when the skate is in use, and thereby relieve the disagreeable jarring sensation produced by skating on a slightly-uneven floor or other surface, and also to prevent the sudden shock produced when walking or running on the skates. The springs also enable the skater to make the stroke with greater ease, and throw himself forward or backward to a greater distance, than is possible with skates of the ordinary construction.

It will be obvious that when the axle-boxes L or plates T become worn or broken they may be easily replaced with but very slight expense; also, that the axles may be kept lubricated by means of an absorbent saturated with oil and disposed in the chambers y of the boxes without danger of oiling the other parts of the skate or getting the oil onto the floor.

I do not confine myself to the use of a spring acting expansively, or arranged precisely as described for resisting the approach of the

axle toward the body of the skate when the skate is under pressure or in use, as a spring acting contractively may be employed in connection with other necessary appliances and perform substantially the same functions. Neither do I confine myself to locating either or both of the springs between the rear and forward axles, as shown, although I deem this preferable; or to the use of straps for fastening the body to the foot of the wearer; or to the use of an axle-box in the lever, as the axle may be fitted into a hole passing through the lever, or be immovably cast into the lever, as preferred, other means for rocking the body of the skate being provided. One pair of the rollers may also be journaled in a pivoted lever and provided with a spring, as described, and the other attached in any ordinary manner, although it is preferable to have both pairs of the rollers mounted and arranged as shown.

Having thus explained my invention, what I claim is—

1. In a roller-skate, the lever G, bracket E, spring J, axle N, rollers D, screw R, and body A, combined and arranged to operate substantially as set forth.
2. In a roller-skate, the axle-box L, provided with the fulcrum or flange b , in combination with the lever G, provided with the mortise m , notch or groove a , and screws v , substantially as set forth.
3. In a roller-skate, the plate T, in combination with the box L and screw Y, substantially as and for the purpose specified.
4. In a roller-skate, the axle-box L, provided with the hole h and chamber y , substantially as and for the purpose set forth.

JOHN S. RICHARDSON.

Witnesses:

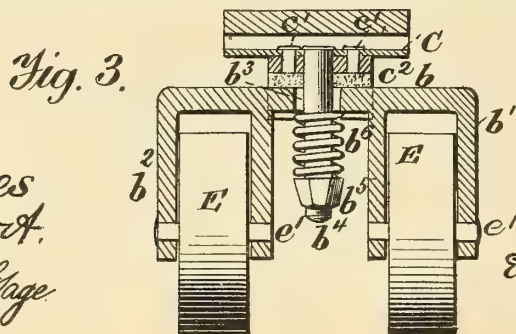
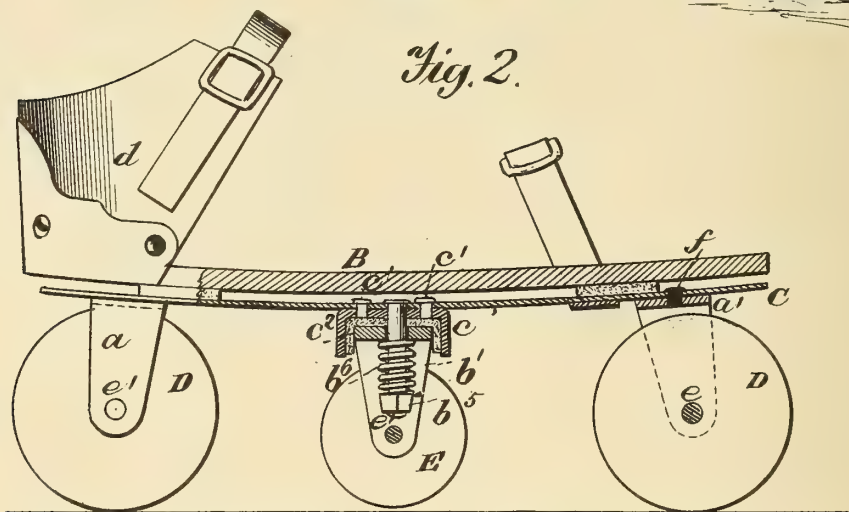
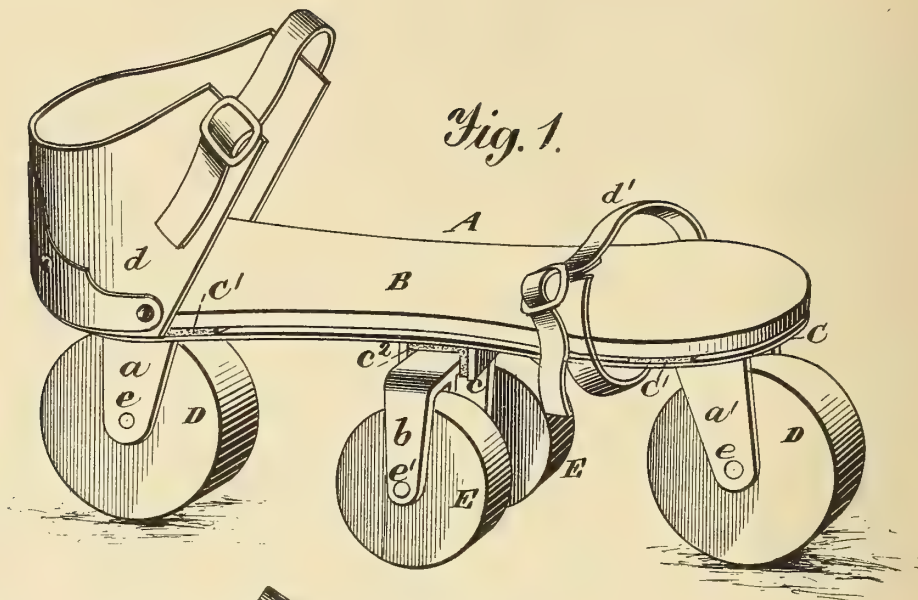
C. A. SHAW,
L. J. WHITE.

A. B. CLARK.

ROLLER SKATE.

No. 301,676.

Patented July 8, 1884.



Witnesses
A. Ruppert.
Alfred T. Sage.

Inventor:
Alvin B. Clark
by
England & Blanchard
Attys

(No Model.)

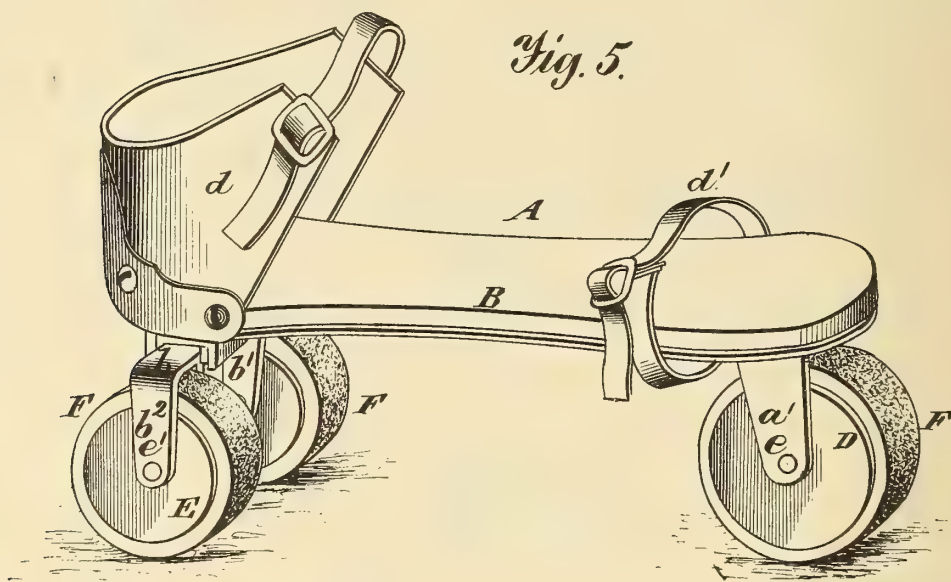
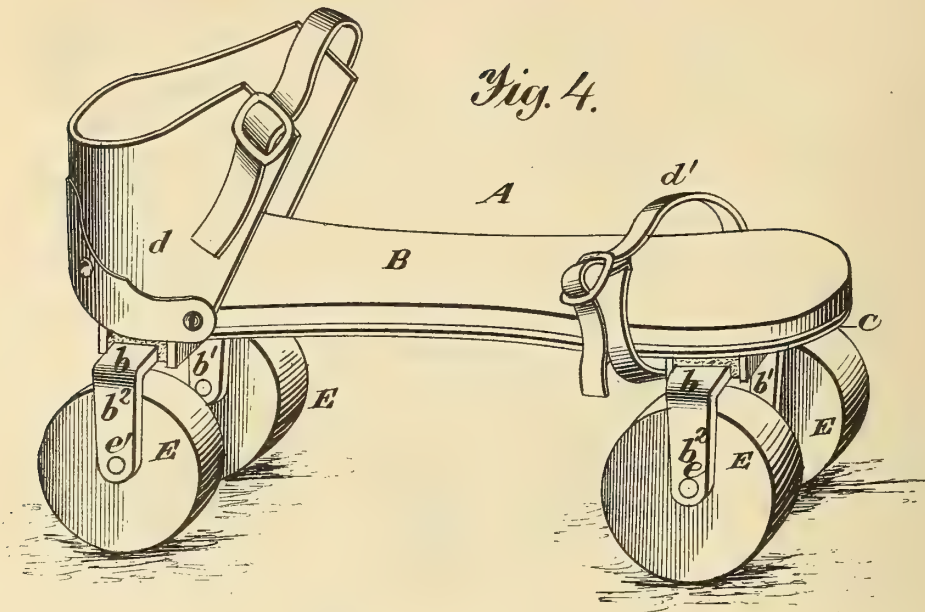
2 Sheets—Sheet 2.

A. B. CLARK.

ROLLER SKATE.

No. 301,676.

Patented July 8, 1884.



Witnesses.
A. Rupert,
Alfred T. Cager

Inventor.
Alvin B. Clark,
by
England & Blanchard
Attys

UNITED STATES PATENT OFFICE.

ALVIN B. CLARK, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 301,676, dated July 3, 1884.

Application filed March 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, ALVIN B. CLARK, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in roller-skates; and it consists in attaching to the body of the skate rollers in such a manner that the body of the skate will have a lateral rocking movement to conform to the various positions of the skater's foot, and, further, by the manner of attachment a certain degree of elasticity is obtained, which is highly important in a durable, easy-working, and perfect skate.

The object of my invention is, first, to construct a skate that will have an elastic metallic bed-piece; second, to attach to the same rollers that are formed plain or with elastic tires; third, to connect said rollers to the under face of a body or foot part in such a manner that one or more may be held to the front and rear of the skate-body, and one or more be held to the center or midway of said body, and said connection may be either rigid or elastic; fourth, to form a roller-skate with one or more rollers at each end of the body of the skate, and one or more about midway the same, in such a manner that the middle rollers will only have a bearing when the body of the skate is rocked laterally; fifth, to arrange the rollers either centrally or at the ends of the skate-body in such a manner as to permit the body of the skate to have a rocking lateral movement, while the under face of the rollers have a level bearing; sixth, to so arrange said rollers on the under face of the skate-body that two of the same may be in front and one in the rear, or that two may be in the rear and one in front in the form of a tricycle; seventh, to prevent the binding or tendency to straight lines while the skater is turning or performing various evolutions on said skates. I attain these objects by means of the peculiar arrangement and construction of the various parts of my device, which will be more fully pointed out and described in the specification and claims, reference being had to the drawings accompany-

ing this application, and forming part of the same, in which—

Figure 1 is a perspective view of my invention, showing one roller at each end and two oscillating rollers located midway between. Fig. 2 is a vertical sectional view of the same, showing manner of attachment to spring-plate or bottom of body. Fig. 3 is a vertical sectional view of roller-frame, showing central pin, spring, elastic packing, and manner of attachment to body-plate. Fig. 4 is a perspective view showing two rollers attached to each end of skate-body; and Fig. 5 is a perspective view showing one roller attached to front of body, and two rollers attached to the rear, forming a tricycle.

Similar letters refer to similar parts throughout the drawings.

Referring to the drawings, A represents a roller-skate formed after or in accordance with my invention, the body or upper part, B, being formed of any suitable material, (preferably of wood,) and of any desirable shape.

To the under face of body B is secured a metal plate, C, said plate being formed of sufficient thickness to be durable and slightly elastic. Between said body B and plate C is placed elastic packing or pads, to prevent jarring while the skate is in use.

Brackets or bearings *a* and *a'* are formed to receive the wheels or rollers D, their lower ends being perforated to receive screw-bolts *e* and *e'*, the perforations on each side of said brackets being screw-threaded to receive said bolts and hold them in place, said bolts *e* and *e'* forming bearings for the rollers D, said rollers being centrally perforated to loosely fit over said shafts. Brackets *a* and *a'* are bent at right angles, and are held by their upper surfaces to plate C by means of bolts *f*. The central bracket, *b*, is formed double to inclose two rollers, E. Said rollers are formed similar to rollers D, and have like central perforations to loosely fit on bearing-pins *e'*, said pins or bolts being screw-threaded, like bolts *e*. Said bracket *b* is formed with vertical projections having screw-thread perforations to receive bolts *e'*. The upper portion of bracket *b* is formed with a central elongated perforation, *b'*, adapted to loosely receive pin or bolt *b'*. One end of said bolt is formed screw-threaded

and provided with an internally-screw-threaded nut, b^5 . A coiled spring, b^6 , is placed between said nut b^5 and the inner face (or lower face) of bracket b , as shown in Figs. 2 and 3, the purpose of which is to hold the bracket b in place and permit of its oscillating or rocking movement.

I do not confine myself to this particular form of spring, as any other suitable spring may be used without departing from the spirit of my invention. Bolt b^4 is formed with a flat head adapted to rest against the upper face of plate C, around a perforation formed in said plate to receive said bolt. A short metallic receiving-bracket, c , having perforations to receive bolts c' , by which it is held to plate C, is formed with angular projecting flanges, between which the upper part of bracket b rests, a flexible pad, c^2 , being inserted between said brackets, as shown in Figs. 2 and 4, said pad being formed of rubber or other suitable material, said bracket and pad being centrally perforated to receive bolt b^4 . This form of construction is usually placed midway between the ends of body B and plate C, as shown in Figs. 1 and 2; but in other forms of construction, when desirable, said bracket b may be placed at either end of plate C, as shown in Figs. 4 and 5.

The great advantage of this construction over skates where the roller-brackets are rigidly secured to the skate-body is that the body of the skate accommodates itself to the foot of the wearer, and permits of an easy and free movement in any direction desired. When the oscillating bracket b is used near the center of body B, with a single roller in front and rear, while moving in a straight line the rollers E do not touch the floor, pavement, or surface on which rollers D move, but the moment a turn or curve is made then one or the other of rollers E touches the surface, bears a portion of the weight, and aids in turning, and prevents the slipping that usually occurs with

rollers in front and rear. Retaining-straps d and d' are secured to the body B in the usual manner, by which the skate is held to the operator's feet. Rollers D and E are formed of any suitable material, (preferably of wood,) and may be used plain, or their peripheries may be covered with elastic bands F, which may be shrunk into concavities formed in said peripheries, or may be attached in any other suitable manner. Said tires or bands F may be formed of rubber or any other elastic material.

Having thus described my invention, what I desire to secure by Letters Patent is:—

1. The combination, with the body of the skate and the plate secured thereto, of the double bracket having rollers mounted on independent shafts, and secured to the plate by means of a screw-bolt passing through an elongated slot in the bracket between the rollers, substantially as specified.

2. The combination of the body of the skate with the double bracket b , having rollers independently mounted therein, connecting-bolt b^4 , and spring b^6 , substantially as described.

3. The combination, with the plate attached to the body of the skate, of the double bracket b and rollers E, the intervening elastic pad c^2 , and the connecting-bolt and spiral spring, substantially as specified.

4. The combination, with the body of the skate and the metallic plate having intervening elastic pads, of the end brackets and rollers, the intermediate double bracket, and independently-mounted rollers, and the elastic connections, whereby the bracket is secured to the plates, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALVIN B. CLARK.

Witnesses:

JOS. C. RATLIFF,
ROBERT F. FURNAS.

(No Model.)

E. F. JOHNSON.

WHEEL FOR ROLLER SKATES.

No. 301,606.

Patented July 8, 1884.

Fig. 1.

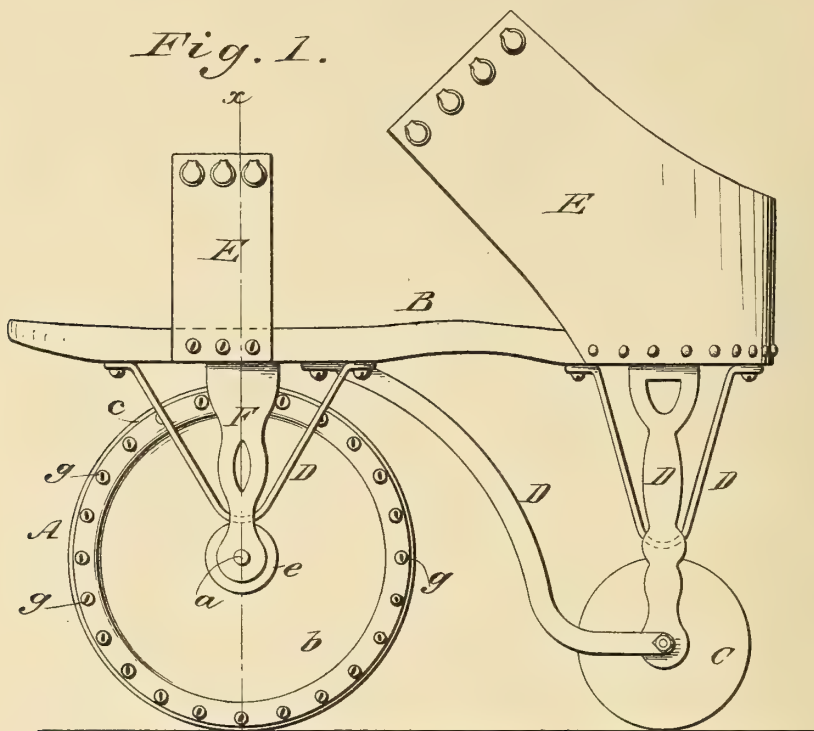
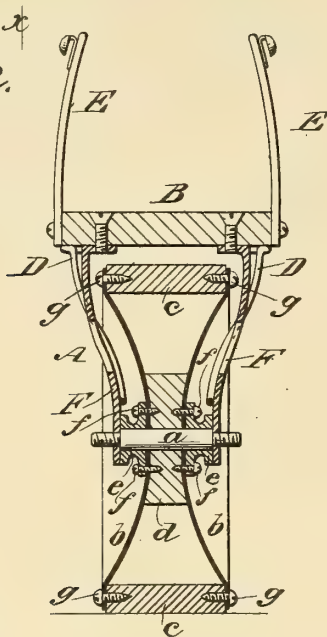


Fig. 2.



WITNESSES:

John R. Deemer
Le. Sedgwick

INVENTOR:

E. F. Johnson
BY *Munn & Co*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD F. JOHNSON, OF JERSEY CITY, NEW JERSEY.

WHEEL FOR ROLLER-SKATES.

SPECIFICATION forming part of Letters Patent No. 301,606, dated July 8, 1884.

Application filed April 30, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. JOHNSON, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and
5 Improved Wheel for Roller-Skates, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in
10 which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation of a roller-skate having my new wheel applied thereto, and Fig. 2 is a sectional elevation taken on the line
15 *xx* of Fig. 1.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

Referring to the drawings, the foot-piece B, rear wheel, C, braces D, and straps E may be of the ordinary or of any approved construction.

A represents my new wheel. This is attached to the foot-piece B by the side plates, F, screwed upon the ends of the shaft or axle
20 *a*, upon which the wheel A turns. The wheel A is composed of the side metallic plates, *b b*, rim *c*, of sole-leather, central block, *d*, and side journals, *e e*, placed upon the axle *a*, and secured by the screws *f*, passed through the
30 flanges of the journals and the side plates, *b*,

and screwed into the central block, *d*, as shown clearly in Fig. 2. The side plates, *b*, are by preference made saucer-shaped, and they are secured at their edges to the edges of the leather rim *c* by the series of screws *g*, which, after passing through the plates, screw directly into the sole-leather, so that the leather serves both as felly and tire to the wheel, making the wheel very light and cheap, and at the same
35 40 time strong and durable.

Instead of using sole-leather for the rim *c*, heavy rubber or other flexible material may be used and not depart from the spirit of my invention.
45

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a wheel, of the saucer-shaped side plates, *b*, central block, *d*, and leather rim *c*, substantially as and for the purposes set forth.
50

2. The saucer-shaped side plates, *b*, secured to the sole-leather rim *c*, in combination with the central block, *d*, and journals *e e*, secured to the plates *b* and block *d*, substantially as shown and described.
55

EDWARD F. JOHNSON.

Witnesses:

H. A. WEST,

C. SEDGWICK.

(No Model.)

J. S. NEWELL & H. D. STONE.

ROLLER SKATE.

No. 302,016.

Patented July 15, 1884.

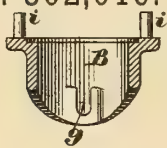


Fig. 6.

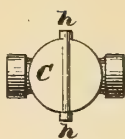


Fig. 7.

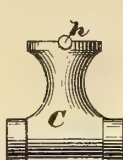


Fig. 8.

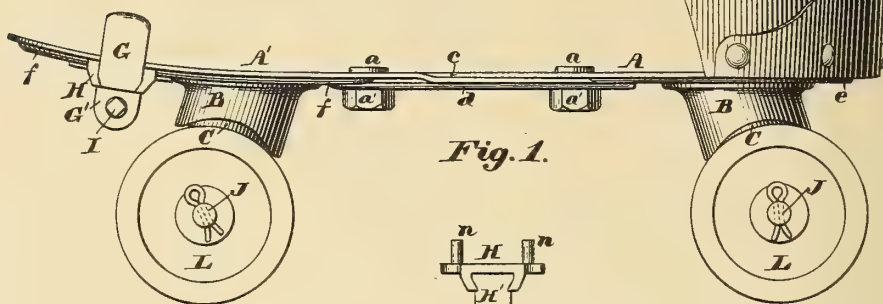


Fig. 1.

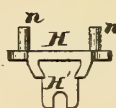


Fig. 9.

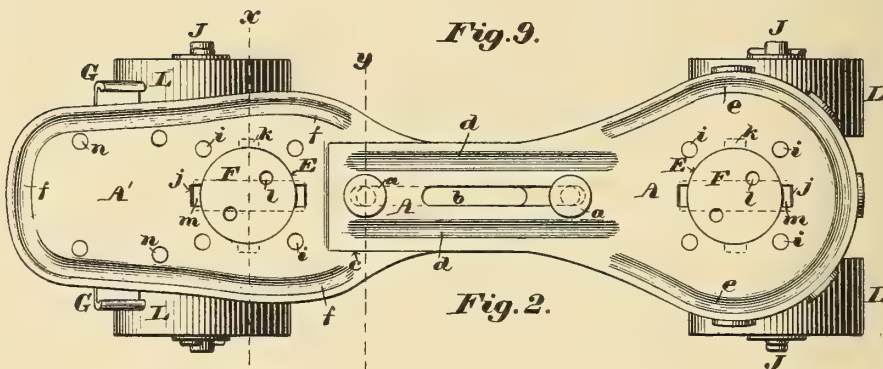


Fig. 2.

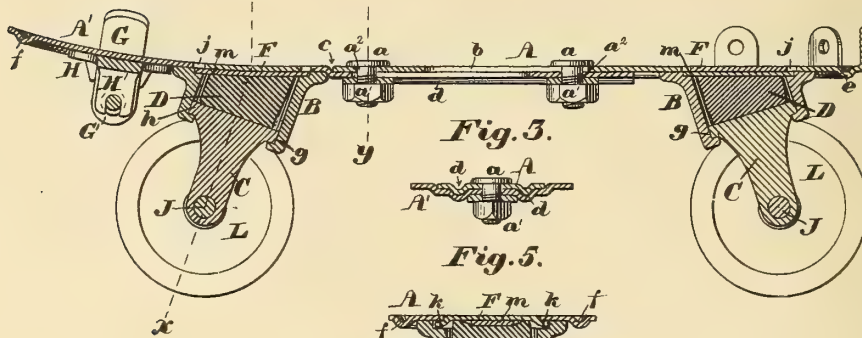


Fig. 3.



Fig. 5.

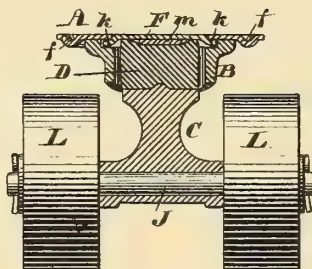


Fig. 4.

Witnesses:

L. V. Piper,
Walter E. Lombard.

Inventors:

James S. Newell,
Henrie D. Stone,

by N. E. Lombard
Attorney.

UNITED STATES PATENT OFFICE.

JAMES S. NEWELL, OF NEWTON, AND HENRIE D. STONE, OF BOSTON, MASS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 302,016, dated July 15, 1884.

Application filed March 24, 1884. (No model.)

To all whom it may concern:

Be it known that we, JAMES S. NEWELL, of Newton, in the county of Middlesex and State of Massachusetts, and HENRIE D. STONE, of Boston, in the county of Suffolk and State aforesaid, have invented jointly certain new and useful Improvements in Roller-Skates, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to the construction of roller-skates, and especially to that class of such skates which are adjustable to different lengths; and it consists in certain novel constructions, arrangements, and combinations of parts, which will be readily understood by reference to the description of the drawings, and to the claims to be hereinafter given.

Figure 1 of the drawings is a side elevation of a roller-skate embodying our invention. Fig. 2 is a plan of the same with the heel-strap removed. Fig. 3 is a central longitudinal section of the same. Fig. 4 is a transverse section on line *x x* on Figs. 2 and 3. Fig. 5 is a transverse section on line *y y* on Figs. 2 and 3. Fig. 6 is a central section of the spring-receiving socket detached from the other parts, and showing the bearing for supporting the axle-carrying stand in elevation. Figs. 7 and 8 are respectively a plan and elevation of the axle-carrying stand, and Fig. 9 is an end elevation of the toe-clamp-carrying stand detached.

The foot rest or support is made from thin sheet-steel in two parts, which overlap each other, and are adjustably secured together by means of the two bolts *a a* and nuts *a' a'*, said bolts being each fitted to a hole, *a²*, in one of said parts, and passing through and adapted to be freely moved lengthwise of said support in a slot, *b*, cut in the other part, and extending longitudinally thereof, as shown in Figs. 2 and 3. The part *A'* of said foot-support has formed in its upper surface a rectangular recess, *c*, of a depth just equal to the thickness of the metal, to receive the forward end of the part *A*, so that the upper surfaces of the two parts, or those portions thereof upon which the boot rests, shall be substantially in the same plane. Both of the parts *A* and *A'* have formed in their upper surfaces two long and parallel depressions, *d d*, and corresponding projections

upon their under sides, so arranged that the projections on the under side of the part *A* fit into the depressions in the upper surface of the part *A'*, and serve to guide the parts when being adjusted, and aid in preventing lateral movement of one part upon the other when clamped together, as shown in Fig. 5. The part *A* has formed in its upper surface the curved depression *e*, extending around the heel portion thereof, near its outer edge, and a corresponding projection on its under side, and the part *A'* has a similar depression, *f*, around its outer edge, with a corresponding projection upon its under side, these depressions and projections being formed by bending or embossing the metal in suitable dies, for the purpose of stiffening the foot-support, and thus rendering it practical to use thinner metal therefor and make a lighter skate.

B B are two sockets made in the form of flanged rings, the axes of which are oblique to their flanged upper ends, and have formed in the front and rear sides of their inner surfaces the bearings *g g*, open at their upper sides, as shown in Fig. 6, said bearings being designed to receive the trunnions *h h* of the axle-carrying stand *C*. (Shown in Figs. 7 and 8.) The sockets *B B* each have cast thereon and projecting upward therefrom a series of pins, *i i*, which pass through holes formed in the plate *A* or *A'*, and are headed down thereon, for the purpose of securing said rings firmly to the plates *A* and *A'*, by which means a great saving in labor is made over riveting said rings to said plates by the use of ordinary rivets, inasmuch as the number of holes to be drilled or punched is reduced one-half by having the rivets formed upon and integral with the rings *B B*.

D D are pieces of rubber placed within the sockets *B B*, and between the upper ends of the axle-carrying stands *C C* and the under side of the plates *A* and *A'*, to serve as springs and render the skate yielding in a well-known manner. By compressing the rubbers *D D* to a greater extent than in their ordinary use the trunnions of the stand *C C* may be removed from the bearings *g g*, and then by turning said stand partially around they may be removed for the purpose of renewing the rubber when it becomes worn. As, however, it re-

quires a very heavy pressure to remove the stands C C in this way, other means of access to the rubber springs are provided by cutting a circular opening, E, in each of the plates A and A', directly over the springs D D, with two rectangular notches, j, cut in opposite sides of each of said openings, said openings being each closed again by a plate of steel, F, cut to the same shape as the opening, and having its projecting ears k offset an amount equal to the thickness of the metal, and after passing said ears through the notches j j the plate F is moved about a vertical axis about a quarter of a revolution to pass said ears k under the plate A or A' by means of a forked wrench placed in the holes l l in said plate, as shown in Fig. 2. To strengthen the plates F, a supplementary plate, m, having parallel sides, is placed beneath each of said plates F, and extends under the plate A or A', as shown in dotted lines in Fig. 2 and in section in Fig. 4.

G G are two sliding toe-clamping jaws fitted to dovetailed bearings in the stand H, and arranged to be adjusted toward or from each other by means of the screw-spindle I, provided with right and left hand screw-threads, which work in corresponding female threads, formed in the ears G' of said jaws, said screw-spindle being prevented from moving endwise by the forked ear H', projecting downward from the stand H, and engaging a circumferential groove in said screw-spindle in a well-known manner. The stand H has cast therewith and projecting upward therefrom a series of pins or rivets, n n, which pass through holes drilled or punched in the plate A', and are riveted down thereon to secure said stand and plate firmly together.

J J are axles set in the supports or stands C C, and having mounted thereon the trucks L L in any well-known manner.

We are aware that roller-skates having extensible foot supports or plates have been made and used, and therefore we do not claim, broadly, an extensible or adjustable foot-support.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. A roller-skate having a foot-support made in two parts of thin sheet metal, arranged to overlap each other and to be adjusted to vary the length of the skate, and having their surfaces embossed or struck up to form depressions upon one side, and corresponding projections upon the other side extending around

the outer portion of said foot-support, substantially as described.

2. The plates A and A', each provided with the bolt-hole a^2 , the slot b, and the two parallel depressions d d, in combination with the bolts a a and nuts $a' a'$, all arranged and adapted to operate substantially as and for the purposes described.

3. The combination, in a roller-skate, of the plate A, provided with the bolt-hole a^2 and the slot b, the plate A', provided with the rectangular recess c, the bolt-hole a^2 , and slot b, and the bolts a a and nuts $a' a'$, all arranged and adapted to operate substantially as described.

4. The combination, in a roller-skate, of a foot-support made of sheet metal, the ring-socket B, provided with the open bearings g g, and the axle-carrying stand C, provided with the trunnions h h, integral therewith, substantially as described.

5. The combination, in a roller-skate, of a foot-support made of sheet metal, and perforated with a series of holes, and a spring-in-closing and axle-stand-carrying socket provided with a series of pins or rivets to fit said holes, and formed integral with said socket, substantially as and for the purposes described.

6. The combination, in a roller-skate, of a foot-support made of sheet metal, and having formed therein the opening E j, the ring-socket B, the axle-supporting stand C, the rubber spring D, and the plate F, provided with the ears k, and adapted to be removably secured in the opening E j, substantially as described.

7. The combination of a sheet-metal foot-support, with the toe-clamp stand H secured thereto by means of rivets n n, formed thereon and integral therewith, substantially as described.

8. The combination, in a roller-skate, of the plates A and A', each provided with the two longitudinal and parallel depressions d d, and one or more bolts for clamping said plates together in variable positions, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 21st day of March, A. D. 1884.

JAMES S. NEWELL.
HENRIE D. STONE.

Witnesses:

N. C. LOMBARD,
WALTER E. LOMBARD.

(No Model.)

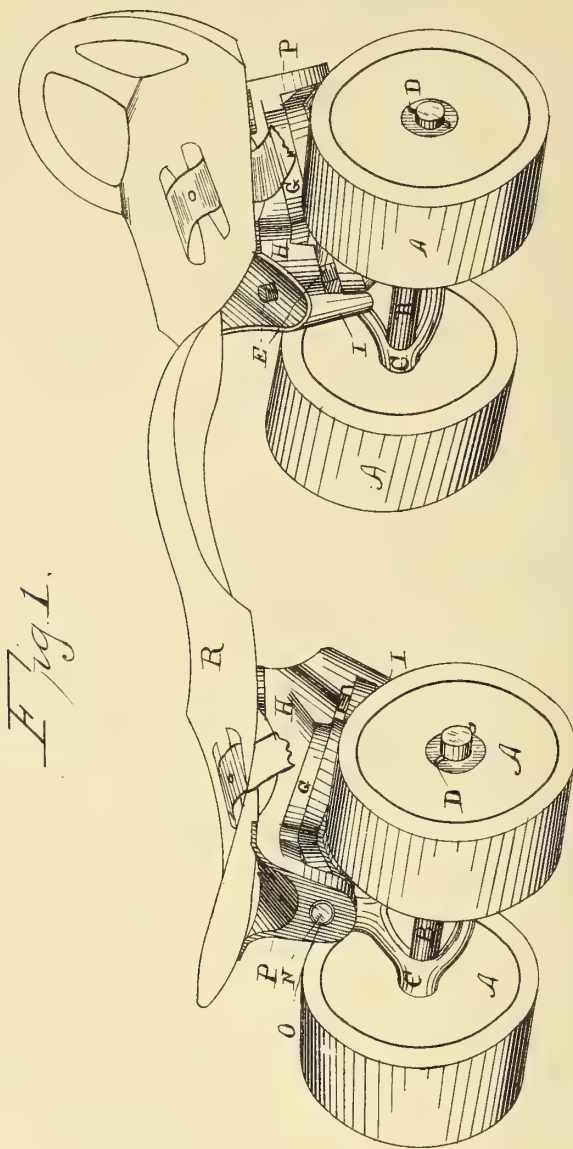
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THOMPSON M. CONNER & THEODORE M. CONNER.

ROLLER SKATE.

No. 302,241.

Patented July 22, 1884.



Witnesses:
J. F. Holden
Harrison Ogborn

Inventor.
Theodore M. Conner
Thompson M. Conner
By Harrison Ogborn, their attorney

(No Model.)

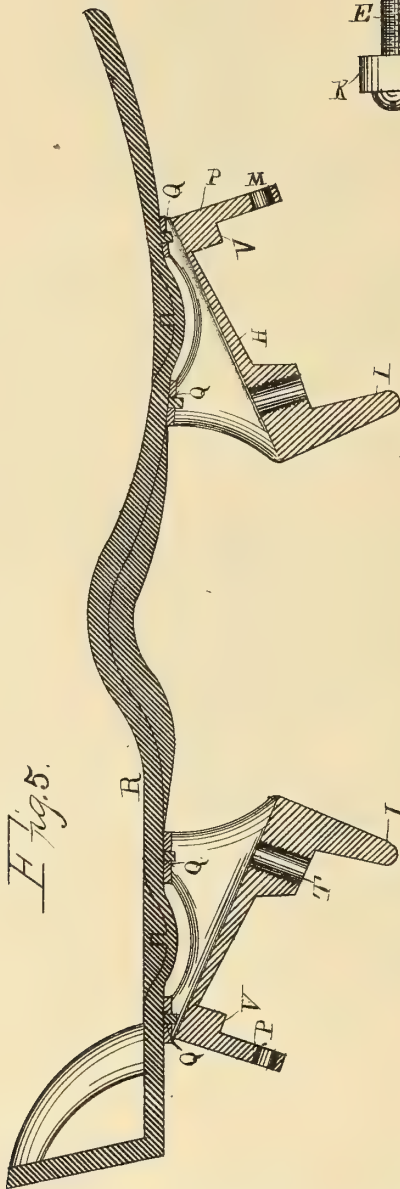
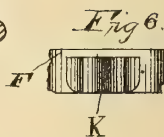
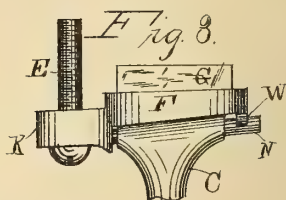
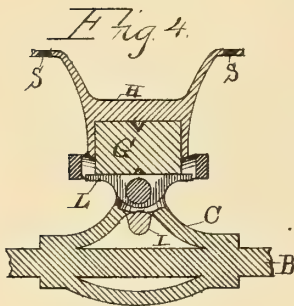
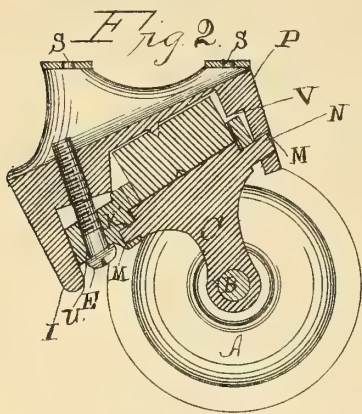
2 Sheets—Sheet 2.

THOMPSON M. CONNER & THEODORE M. CONNER.

ROLLER SKATE.

No. 302,241.

Patented July 22, 1884.



Witnesses:
J. F. Holden.
Harrison Ogden

Inventor:
Theodore M. Conner
Thompson M. Conner
By Harrison Ogden, their attorney

UNITED STATES PATENT OFFICE.

THOMPSON M. CONNER AND THEODORE M. CONNER, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 302,241, dated July 22, 1884.

Application filed June 12, 1884. (No model.)

To all whom it may concern:

Be it known that we, THOMPSON M. CONNER and THEODORE M. CONNER, of Richmond, Wayne county, and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification in such full, clear, and exact terms as will enable others to construct and use the same, reference being had to the accompanying drawings, forming part of said specification, in which—

Figure 1 is a perspective view of the entire skate according to the preferred construction. Fig. 2 is a longitudinal vertical section. Fig. 3 is a detailed view of the cushion or spring, screw, and rubber-holder. Fig. 4 is a transverse section of rubber-holder and rocking plate, pivot, and stool. Fig. 5 is a longitudinal vertical section of the foot-plate, rivet, and stool. Fig. 6 is a sectional detail view of the same devices.

Our invention relates to a novel construction and arrangement of the pressure-plates, to novel means of preventing the undue lateral expansion of the rubber springs in a skate, and to novel means of pivoting the pressure-plate to skates; and it also consists in certain features of construction and combination hereinafter more particularly described, and set forth in the claims appended.

Our invention has for its object the production of a roller-skate combining durability and simplicity in its construction, and which can be readily and easily taken apart and put together, and in which there is great strength and quickness of adjustment, in which the rubber is protected from undue expansion, in means for giving any degree of strength or firmness to the rocking motion, and an elastic spring or cushion in a skate, to prevent sudden jars when passing over slight obstructions, and of great facility of turning movements.

In the drawings, A, Fig. 1, represents the wheels of our improved skate; B, the axle; C, the axle-support; D, the pins that hold the wheels in position; E, the screw that holds the rubber-holder in place, while the other end is held in position by ledge U and by pivot N, resting in notch W; T, the screw-hole in hanger. G is the rubber spring. F is the rubber-holder encircling the rubber. H is the hanger

that supports the working parts. I is the lug that helps the screw to hold the rubber-holder in position. K is the notch in the end of the rubber-holder that engages with supporting-lug I. K' is the lower pivot to the pressure-plate L, which pivots in hole M in rubber-holder F, while the other end of pressure-plate L is supported on pivot N in hole O in standard P on hanger H, while the hanger is held firmly in position by the stationary rivets Q, cast on the malleable iron or other soft-metal skate-plate R, and passing down through the cast or drilled countersunk holes S in the hangers H, which are firmly riveted to the plate thereby.

When our skate is constructed as shown, and it is desired to make a strong, firm spring and decrease the rocking motion of the foot by compressing the rubber, it is only necessary to turn the screw to the right, which may be made for a screw-driver or a thumb-screw, and when it is desired to make it a soft, easy elastic spring the screw has only to be turned the other way, when the pressure of the rocking plate will be released and the object accomplished. If it is desired to relieve the skate of the cushion or spring, it is done by loosening the screw, and if it is desired to diminish the cushion movement it is done by tightening the screw. Thus it will be seen that when new beginners wish to skate on our skate the tightening of the screw makes a firm slightly-elastic or non-elastic skate vertically, as desired, and restricts the rocking motion of the skate-plate by compressing the rubber; but when experts wish to use it the loosening of the screw not only secures a larger easy rocking motion to the skate-plate, but a soft, easy cushion-skate, while the very oblique position in which the pivoted pressure-plate rests gives a large amount of crimp to the skate, and makes it capable of making very short curves when in use.

Having thus described the nature, construction, and operation of our invention, what we claim as new and useful, and desire to secure by Letters Patent, is—

1. In a roller-skate, the soft metallic skate-plate R, in combination with the hanger H and lugs Q, said lugs being cast integral with said plate, and the stool firmly attached there-

to by riveting, for the purposes and in the manner substantially as herein set forth and described.

2. In a roller-skate, the oscillating pressure-plate L, having pivots N and K, one end pivoted to rigid stud P on hanger H, while the other end is pivoted in the adjustable rubber-holder F, arranged and operated as set forth, for the purposes specified.

3. In a roller-skate, the encircling rubber-holder F, having hole U near its lower end for its free movement on the screw, and open notch at the other end, in combination with ledge V, screw E, rubber spring G, and stool H, for the purposes and uses herein set forth.

4. In a roller-skate, the wheels A, axle B, axle-support C, and pressure-plate L, in combination with screw E, rubber-holder F, hav-

ing the bearing M for the pivot K', rubber spring G, hanger H, and skate-plate R, constructed and used for the purposes and in the manner herein set forth.

5. In a roller-skate, the screw E, rubber-holder F, pressure-plate L, rubber spring G, and hanger H, in combination with notch W and lug I, when constructed and operating together for the purposes and in the manner herein set forth and described.

In testimony whereof we have hereunto set our hands and seals this 5th day of June, 1884.

THOMPSON M. CONNER. [L. S.]
THEODORE M. CONNER. [L. S.]

Witnesses:

J. W. TAYLOR,
W. P. JAY.

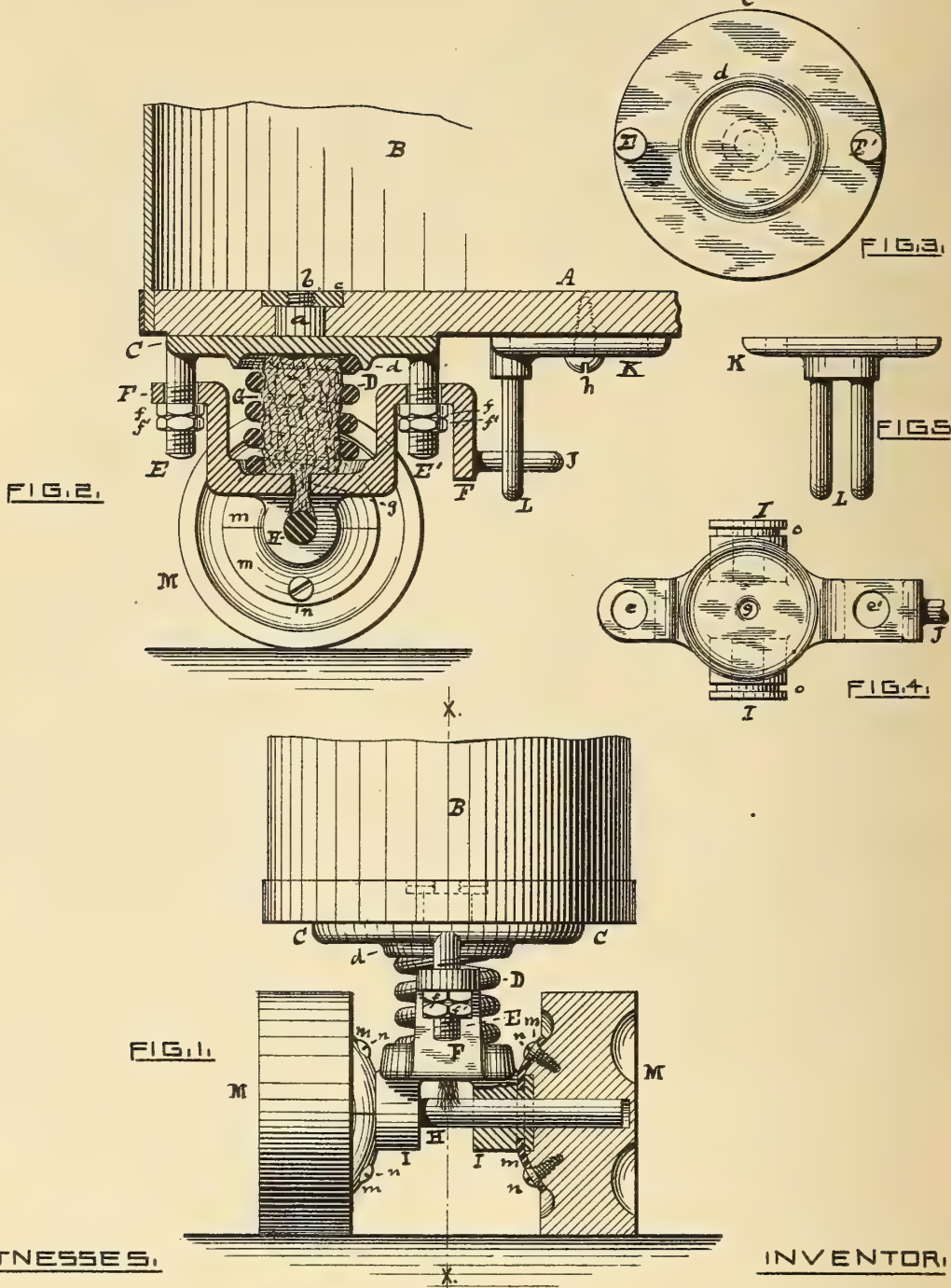
(No Model.)

J. B. LINCOLN.

ROLLER SKATE.

No. 302,503.

Patented July 22, 1884.



WITNESSES.

William B. Hallitt

Warren R. Pene

INVENTOR.

Jesse B. Lincoln

UNITED STATES PATENT OFFICE.

JESSE B. LINCOLN, OF EAST PROVIDENCE, RHODE ISLAND.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 302,503, dated July 22, 1884.

Application filed April 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, JESSE B. LINCOLN, of East Providence, in the county of Providence, in the State of Rhode Island, have invented a certain new and useful Improvement in Roller-Skates; and I declare the following to be a specification thereof, reference being had to the accompanying drawings.

Like letters indicate like parts.

Figure 1 is an end view of my improved skate, partly in elevation and partly in vertical section. Fig. 2 is a vertical section on line *x x* of Fig. 1. Figs. 3, 4, and 5 are detail views.

My invention relates to the mounting and lubrication of the rollers upon the axle, and to the adjustment of the spring and oscillation of the truck; and it consists of the devices hereinafter described, and specifically pointed out in the claims.

In the drawings, A represents the foot-board of the skate, and B the heel band or strap, fastened thereto in the usual manner. A bed-plate, C, (of which a plan of the under surface is shown in Fig. 3,) is fastened to the foot-board A by the central stud, *a*, which has the screw-thread *b* on its end, and the nut *c*, as shown in Fig. 2. By means of this method of fastening, the plate C is capable of a slight rotation. A circumferential ridge, *d*, is centrally located on the under side of the plate C, and forms a cup-like concavity to keep in position the spiral spring D, upon which the skate rests. There are two posts, E E', extending downward from the bed-plate C at front and rear, as shown in Figs. 1 and 2. The truck F is made preferably in the shape shown in Figs. 1, 2, and 4, Fig. 4 being a plan of the same upon its upper side. The truck has a cup-like depression at its center, as fully shown in said figures, to receive the lower end of the coiled spring D. Its front and rear ends are in the angular directions shown in Fig. 2, and have holes *e e'*, through which the posts E E' of the bed-plate C pass, and nuts and check-nuts *f f'* upon the screw-threaded ends of said posts hold the truck F in position thereon.

Inside the coil of the spring D is inserted cotton waste, G, or other material suitable to hold oil by saturation, and the fibers of the same extend downward through the central aperture, *g*, of the truck and convey the lu-

bricant to the axle H, whence the oil works along the axle through the hubs and into the rollers on each side. The truck F has on its under surface the hubs I, and upon its inner end a stem or rod, J. A regulator, K, (shown in end elevation in Fig. 5,) has two longitudinal slots on each side, (shown in dotted lines in Figs. 2 and 5,) through which slots screws *h h* are inserted into the foot-board A, by which said regulator is capable of longitudinal adjustment, and can be held in any desired position by the snug driving of said screws. The regulator K has two posts, L, extending downward at a right angle therefrom, between which the stem J of the truck F passes. The rollers M have a central bore from the rear, extending almost to the front, as shown in Fig. 1, to receive the ends of the axle H. They are secured upon the axle by means of two half-washers, *m m*, through which the screws *n n* pass into the wheel. These washers at their center fit loosely into the grooves *o* of the hubs I, thus preventing the rollers from slipping off the axle.

It will be seen that by my device the skate rides upon and is supported by the spring D, thus dispensing with the rigid connection of the skate and truck heretofore common. All jarring in riding over an uneven surface or floor is thus prevented, and the ease and comfort of the skater is secured. The holes *e e'* of the truck F are somewhat, elongated transversely, to exceed the diameter of the posts E E', which pass through them, and so allow a slight lateral movement of the truck. These holes *e e'* on their sides serve as stops to limit the oscillation of the truck. The posts L are moved by and with the regulator K (which is adjustable, as above shown) upon the stem J to any desired distance, and serve as a fulcrum for the leverage of the truck as the latter oscillates toward one side or the other by the pressure of the foot upon the skate on the inside of the curve which the skater is describing in his course. By such depression the spring D is compressed on either side at will, and the wheels thereby assume such angular direction as to travel in the curve required. By adjusting the regulator K nearer the truck the length of such leverage is decreased and the truck is operated by a less movement of the ankle.

For beginners, it is desirable that the truck should be quite rigidly kept in position, which is done by adjusting the regulator and its posts farther from the truck, while for expert performers or for exhibition maneuvering it is desirable to describe shorter curves, which is accomplished by moving the regulator with its post nearer the truck.

The posts L are best made of spring-wire, so placed as to keep in forcible contact with them the interposed rod J, thus preventing any rattling. So, too, an adjustment of the tension of the spring D is possible by means of my contrivance, and this feature is a useful novelty in roller-skates. Such adjustment is accomplished by means of the nuts and check-nuts *ff'*, which crowd up the truck F against the spring D to such extent as desired, thus stiffening the spring. In this manner the same skates can be adjusted to the weight of the person, a heavy person requiring a stiffer spring than a person of lighter weight. The lubricating-waste is held securely within the coils of the spring D, and by its contact with the axle, through the central aperture of the truck, supplies oil to the rollers without any danger of soiling the garments.

My improved method of mounting the rollers upon the axle, by which contrivance the rollers are not bored through, leaves a plane or smooth face to the wheels, thus dispensing with the usual pin-fastening and the projection of the axle beyond the face of the wheel. Great difficulty and danger have been experienced in the use of roller-skates as commonly mounted because of the liability of the projecting portion of the axle to strike against the rollers of the skates in passing, and by such collision tripping the skater and chipping the roller

which it strikes against. This danger is entirely obviated by my method of mounting. Another great advantage is, that it prevents the oil from working through the wheel and spattering therefrom, as is usual when the axle passes completely through the roller.

Instead of partially boring through the roller, as above described, the wheel may be bored entirely through, but the portion of the bore beyond the axle may be stopped by a plug driven in from the front of the wheel; but such a construction would be within my invention as a mere mechanical modification thereof.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. In a roller-skate, the foot-board A, having a bed-plate, C, with posts E E', in combination with the spring D and truck F, having hubs I, axle H, and rollers M, substantially as described.

2. In a roller-skate, the bed-plate C, posts E E', and spring D, in combination with the truck F, mounted on said posts, and the nuts *ff'*, to regulate the tension of the spring D, substantially as shown.

3. The slotted regulator K, adjustable upon the foot-board A, as described, and having posts L L, in combination with the truck F, having the stem J, and mounted upon the posts E E' of the rotating bed-plate C, substantially as and for the purpose specified.

4. The truck F, having the aperture *g*, hubs I, axle H, and rollers M, in combination with the coiled spring D and lubricating material G, substantially as specified.

JESSE B. LINCOLN.

Witnesses:

WILLIAM B. W. HALLETT,
WARREN R. PERCE.

(No Model.)

G. W. KEYSER.

ROLLER SKATE.

No. 303,167.

Patented Aug. 5, 1884.

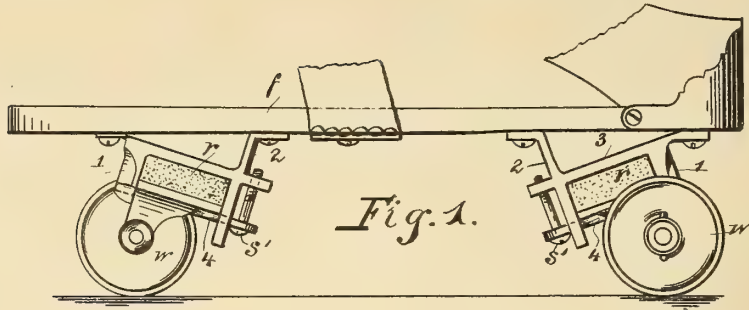


Fig. 2.

Fig. 3.

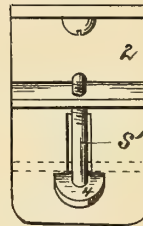
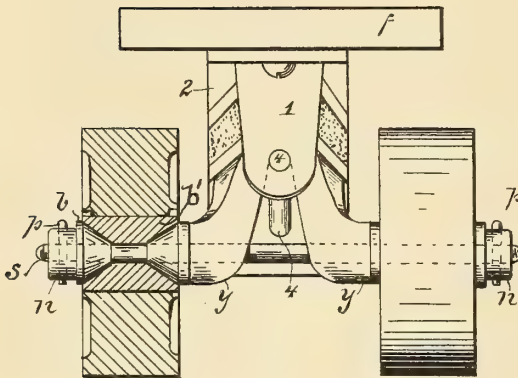
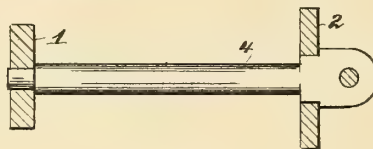


Fig. 4.



WITNESSES.

Jacob W. Cooper
W. S. Smith

INVENTOR.

Geo. W. Keyser
By C. P. Jacobs
att'y.

UNITED STATES PATENT OFFICE.

GEORGE W. KEYSER, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF
TO BENJAMIN C. WRIGHT.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 303,167, dated August 5, 1884.

Application filed March 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. KEYSER, a resident of Indianapolis, Marion county, Indiana, have made certain new and useful Improvements in Roller-Skates, a description of which is set forth in the following specification, reference being made to the accompanying drawings, in the several figures of which like letters indicate like parts.

My invention relates to the construction of casters for what are known as "roller-skates," and will be understood from the following description.

In the drawings, Figure 1 is a side view of my device, the left front wheel being removed. Fig. 2 is a front end view of the forward caster, one of the rollers being in vertical section to show the boxings. Fig. 3 is a front end view of the rear caster; and Fig. 4 is a top view of the bar 4, with cross-sections of the end bars, 1 and 2.

In detail, *f* is the foot-piece of the skate for the wheels or rollers of the casters revolving on shaft *s*. These rollers have metal boxings *b'*, which are bored out conically on each side, and thus fitted to receive the cone-shaped pieces *b*, which fit loosely on shaft *s*. The ends of this shaft are threaded; and *n* are nuts, which work on the threads, to keep the wheels in place; and *p* are pins passing through nuts and shaft for greater security.

y is a yoke, whose arms at their ends are made cone-shaped to fit into the inner wheel-boxings, the shaft *s* passing through these arms, as shown in Fig. 2. *r* is a rubber core or spring fitted in the frame-work of the caster. This frame-work or its front 1, its rear 2, and its upper piece, 3, are all cast in one piece, while the bottom piece, 4, is a bar made in the shape shown in Fig. 4, its front end being journaled into piece 1, and its rear formed into a head, with an opening to receive the adjusting-screw *s'*, the head, back of the screw-hole, being shouldered to fit into an opening formed in rear piece, 2, this whole frame-work being inclined relative to the shaft *s*, as shown in Fig. 1. By removing screw *s'* the bar 4 may be readily withdrawn when desired. This bar 4 passes loosely through an opening in yoke *y*, before it reaches plate 1, and allows a lateral rotating movement of the whole caster on it as an axis. The plate 2 is

slotted, as shown in Fig. 3, to allow an upward movement to bar 4, when the adjusting-screw is tightened. This slot also allows the movement of bar 4 on the screw when any compression of the rubber is caused by the wheels passing over uneven floors. It is thus automatic in relation to this adjustment, and the skate can be used on the sidewalk as well as on a floor.

What I claim, and desire to secure by Letters Patent, is the following:

1. The caster-frame, inclined to the wood of the skate, composed of the integral end pieces, 1 and 2, and top piece, 3, and the bar 4, the yoke-piece *y*, the screw *s'*, the rubber *r*, and the wheels and axis of a caster, all combined substantially as described.

2. The adjustable roller-bar 4, having bearing at one end in front plate of the caster-frame, and a support for the other end in the rear plate of the caster-frame, the screw for adjusting the same, the rubber *r*, and caster-frame, all combined substantially as described.

3. The combination of the yoke *y*, the axle *s*, passing its forked lower ends, the wheels *w*, connected on the axle *s*, the rocker-bar 4, and a caster-frame for supporting such bar, attached to the foot-plate of a skate at an angle, all combined substantially as described.

4. The shaft *s*, with wheels *w* and yoke *y* mounted thereon, between the wheels, a caster-frame secured to the foot-plate of a skate at an angle, as shown, and adapted to inclose a rubber cushion, *r*, the roller-truck secured to the caster-frame by means of a rocker-bar passing through the upper end of the yoke, and adjustable by means of a set-screw, so as to increase or diminish the pressure upon the rubber cushion, substantially as described.

5. A roller-skate wherein the truck-wheels are secured to the frame by means of a yoke pressing against a rubber block seated in the frame-work and a bar passing through the yoke, the other end of the bar adjustable in a slot in the caster-frame by means of a set-screw, substantially as described.

Witness my hand this 14th day of March, 1884.

GEORGE W. KEYSER.

Witnesses:

C. P. JACOBS,
BENJ. C. WRIGHT.

(No Model.)

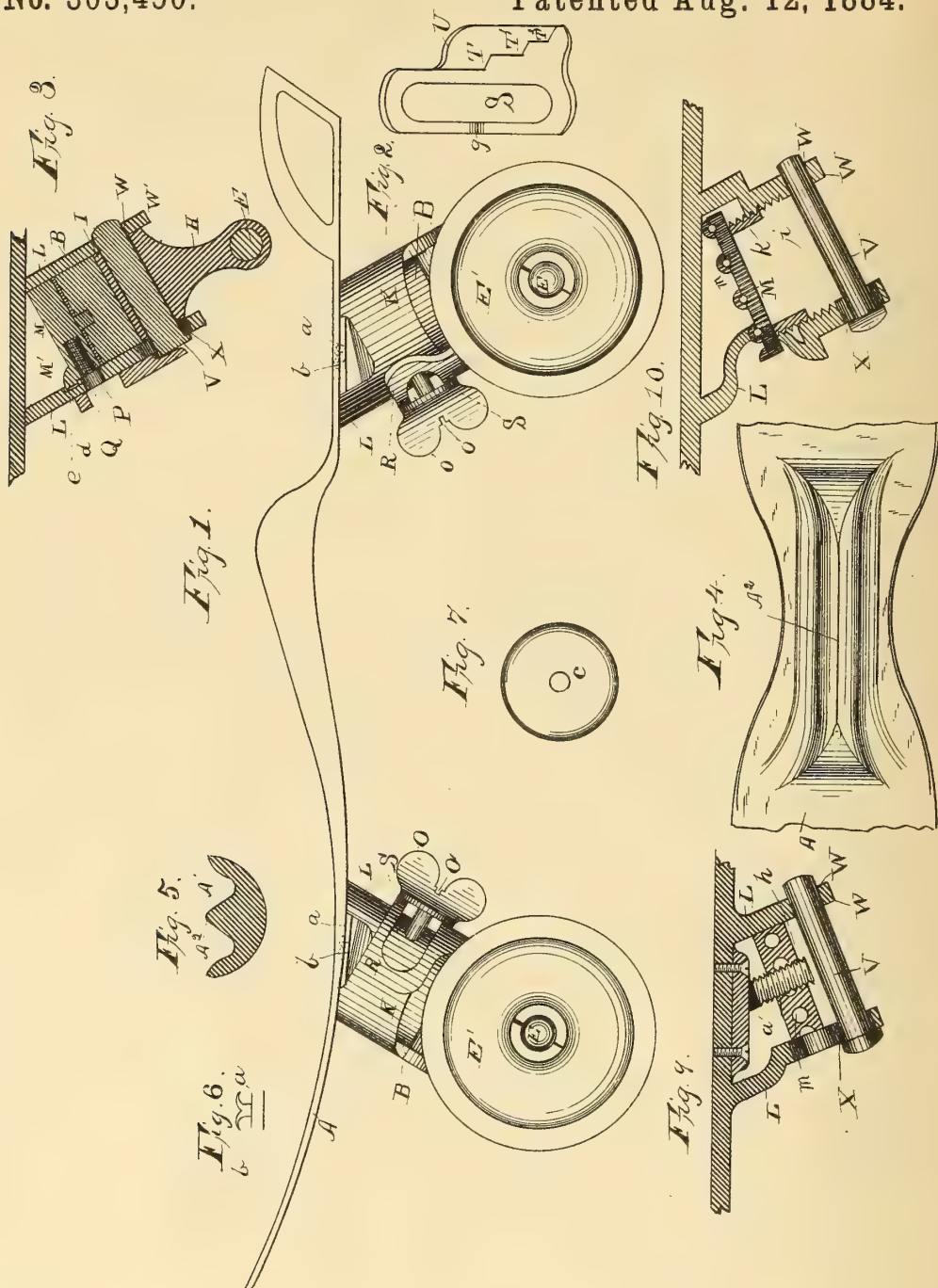
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H. OGBORN.

ROLLER SKATE.

No. 303,450.

Patented Aug. 12, 1884.



Witnesses:
J. F. Holden
M. F. Halleck

Inventor,
Harrison Ogborn

(No Model.)

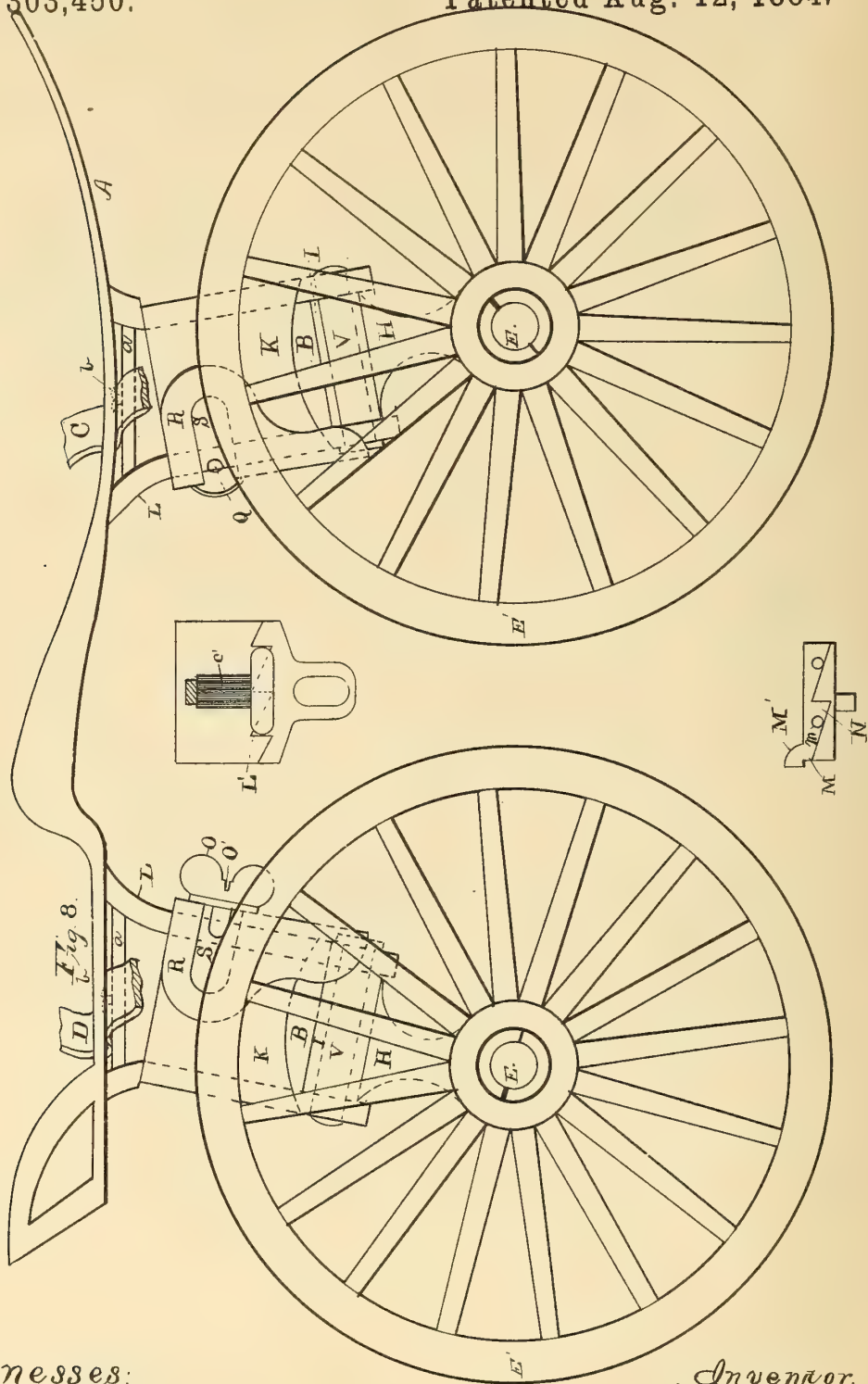
2 Sheets—Sheet 2.

H. OGBORN.

ROLLER SKATE.

No. 303,450.

Patented Aug. 12, 1884.



Witnesses:
Aldison & Study.
F. F. Holden.

Inventor.
Harrison Ogborn

UNITED STATES PATENT OFFICE.

HARRISON OGBORN, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 303,450, dated August 12, 1884.

Application filed July 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, HARRISON OGBORN, of Richmond, Wayne county, Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a full, clear, and exact description, sufficient to enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of a skate embodying my invention. Fig. 2 is a side elevation of a detail thereof. Fig. 3 is a vertical longitudinal sectional view of the hanger and details connected therewith. Fig. 4 is a top plan view of part of the skate-plate. Fig. 5 is a cross-sectional view of the shank of the skate-plate. Fig. 6 is a cross-sectional view of the strap-holder and retaining-lug. Fig. 7 is a top view of the anti-friction plate. Fig. 8 is a side elevation of my invention when made for outdoor use. Fig. 10 is a longitudinal sectional view of the working parts of my invention. Fig. 9 is a modification of my invention showing details.

Like letters of reference indicate corresponding parts in the different drawings.

My invention relates especially to that class of skates known as "roller-skates;" and it consists in new and novel devices and in new combinations of the parts, as hereinafter fully set forth, by which means a skate is produced having a great amount of "crimp," and consequent adaptability to make short turns and curves, ease of motion, simplicity of parts, cheapness of construction, and susceptible of a great variety of easy, desirable, independent adjustments, by which a more effective, satisfactory, and durable roller-skate is produced for floors and outdoor use than is now in ordinary use.

The nature and operation of the invention will be readily understood from the following explanation.

In the drawings, A represents the skate-plate, A' the grooves, and A² the brace-ribs thereon.

B is the rubber spring.

C is the ankle-strap.

D is the foot-strap.

E is the wheel-axle.

H is the axle-support.

I is the circular or oval rocker-plate.

K is the rubber-holder—a part of the hanger L.

L' is a series of circular incline planes on the inside of the hanger L.

M is a circular plate against which the side of the rubber spring presses. There is, however, a thin plate of sheet metal, c, placed between this plate and the rubber, for the purpose of preventing the rubber from sticking fast to the plate M and preventing it being turned to adjust the tension on the spring B.

N is a series of circular incline planes on the outside of plate M, which engage when in use with the circular inclines L'.

O is a thumb set-screw, in which there is a slot, O'; so, if the skate cannot be tightened sufficiently by hand, a screw-driver may be used for the purpose.

P is a screw-hole in plate M, for set-screw O.

Q is a slot in hanger L, in which the smooth part of screw O moves from right to left to regulate the pressure on the spring B.

R is an adjustable stop-plate, having a slot, S, for its adjustment horizontally, so that the steps T T' T² thereon will come in position to stop the vertical movement of the pivot-pin V at any point desired, and thereby permit of any degree of spring desired, or prevent all spring movement, if desired.

U is a projecting flange on the plate R, to hold the pivot-pin V from accidental displacement.

W is a hole in projection W' on hanger L, to retain the upper end of pivot-pin V in place, and should be made flaring inwardly to allow a vertical movement of the other end of the pivot-pin and plate.

X is a vertical slot in projection X', in which the pivot-pin V oscillates vertically when the cushion-spring is in use.

aa are strap-holders, over which the straps n pass, having on their upper sides forked or flaring pins b, which pass upward through the straps n and hold them from accidental displacement.

I prefer to cast the body of my skate of malleable iron, brass, gray iron, or other suitable material; but it may be made of wood or struck up from sheet metal, and hangers riveted or otherwise secured thereto, projecting downwardly at the heel and toe. The pivot-

pins are respectively inclined to the plane of the skate-plate, as seen in Figs. 1 and 3, which secures the necessary amount of crimp to the wheels to make short curves or turns in skating. The pressure rocking plates are secured in position by pivot-pins V, passing through them, upon which they oscillate, supported at the ends in hole W and slot X, which permits a spring movement of the skate-plate. The rocker-plate rests against the rubber spring in the hanger L, against which it bears and oscillates. Within this hanger there is one or more inclined planes, L'. Held against these planes by the rubber there is a circular plate, M, having corresponding incline planes, N, on its outer edge, but reversed, that slide on the planes L' and adjust the pressure against the spring. The mechanisms in the front and rear parts of the skate are alike, but reversed. This plate M has a screw-hole, P, in its side for the insertion of the thumb-screw O, and between the hanger and shoulder on the thumb-screw is secured the shouldered plate R, which permits the lower end of the pivot-pin V to move vertically within certain limits, as desired, or entirely prevents its vertical movement, whereby the skate is given a soft cushion or strong cushion movement or no vertical movement at all, as may be desired, by bringing the notched plates in proper position and securing it by the thumb-screw. This plate R is provided with a flange that extends above the head of the pivot-pin and prevents its displacement. To increase the pressure of the spring the thumb-screw is moved to the left in the slot, and to decrease the pressure the thumb-screw is moved to the right. This plate is provided with two holes—one on each side of the screw-hole—to insert a small instrument to act as a lever to assist the screw in making a side movement, if necessary.

I prefer to cast the circular hangers integral with the skate-plate; but they may be cast separately and attached in any convenient manner, which especially adapts it to be neat, cheap, light, and strong. In Fig. 5, the ends of the plate being made thin and cut away where strength is not essential, the under side of the shank is made oval, as shown, and the upper side of the shank with two or more ribs. Between the ribs are one or more grooves, forming an arch on the upper side of the plate, which is light and strong, thus securing simplicity, durability, and freedom from the annoyance of the parts coming apart when in use.

The advantages of placing the ribs or corrugations on the upper side of the plate, instead of the bottom, where they are usually placed, are that when placed at the bottom the pressure of the foot is more likely to crack the ribs, the tendency of the pressure being to bend or break the plate at its longitudinal center. With the ribs placed on the upper side of the plate, they operate as a brace against

the pressure of the foot, thus obviating the tendency to crack or break transversely.

In skates provided with pivoted rocker-plates acting upon elastic cushions, much difficulty has been experienced in taking up and compensating for the wear and weakening of the rubber springs, and loss of strength and elasticity by constant use. In my invention these difficulties are overcome by the adjustment of the plate M. On the side of the plate near the screw-hole is placed one or more teeth, *d*, that engage with notches *e* on the inside of the hangers, so that when the plate M is adjusted and the screw tightened it is not liable to accidental displacement. This movement of partial rotation of the plate and tooth is made possible by the plate M being enough smaller in diameter than the inside of the hanger to allow the tooth to rotate from one notch to another. The plate R has one or more teeth, *g*, on its inner lower edge, that engages with a series of notches, *f*, on the outside of the hanger, as shown, which allows the plate to be set where it is desired to regulate the vertical movement of the pivot-pin, and then securely locked by the set-screw. Another great difficulty to be overcome is the shock and jar to the person, and wear and breakage of the skates in passing over small hard substances or slight inequalities in the floor or ground in the use of rigid skates devoid of elasticity. In some skates this cushion movement is attempted to be provided for, but is not under the control of the skater, because the tightening of the spring to give less oscillation to the skate takes away the cushion movement when it may be wanted most, and the loosening of the spring to give greater oscillation to the foot-plate gives an excessive cushion movement vertically just when it may be desired to give the least; but in my invention the adjustment of the oscillating motion and the vertical spring movement are independent of each other, and an easy or restricted rocking movement of the plate may be had with a stiff or weak spring, and a stiff or weak spring had with either a stiff or weak oscillating movement.

Fig. 8 shows my invention adapted for outdoor use. I construct skates for that purpose as well as for indoor use. The same general principles of construction of my invention that make it useful for one purpose apply with equal force to the other. For outdoor use I use larger wheels, thicker and wider springs, and wider rocker-plates and longer, heavier hangers, as shown in Fig. 8, which are necessary to overcome the jar in passing over rough places. The wheels may be metal or wood, and supplied with flat or rounded tires of metal, rubber, or such other materials as may be necessary to overcome the jar in passing over rough places.

Fig. 10 is a vertical longitudinal section of my invention, showing the manner of raising the plate by a single circular incline plane,

on the outside of plate M working in a single circular incline plane on the inside of hanger L. In this case the plate M is raised or lowered by pressure sidewise on the outer flange on plate M, or by inserting levers into holes *m* and prying it around to raise or lower it and the rubber.

I do not confine myself to any particular form of the hangers, rubber, or plate, as they may be made of other shapes, and the rubber supported and adjusted, as herein shown in the modification of my invention, (see Fig. 9,) which shows a modification of my invention where the plate M is raised and lowered by a screw, *i*, working in a screw-hole, *m*, in plate M.

Having described the nature, construction, and operation of my invention, what I claim therein as new and useful, and desire to secure by Letters Patent, is—

1. In a roller-skate, the skate-plate A, having a rounded or oval shank on the lower side, and two or more longitudinal ribs and one or more longitudinal grooves on the upper side, as shown, for the purposes substantially as herein set forth and described.

2. In a roller-skate, the plate A, having a shank rounded or oval in cross-section on the lower side and arched longitudinally, and two or more longitudinal ribs and one or more longitudinal grooves on the upper side, substantially as herein set forth and described.

3. In a roller-skate, the strap-holders *a*, and vertical forked or flaring lugs *b*, in combination with skate-straps C D, constructed substantially as shown and described, and for the purposes set forth.

4. In a roller-skate, the hanger L and circular incline planes *L'*, in combination with circular plate M, and circular incline planes N for regulating the pressure of the springs against the rocking plate, in the manner and for the purposes herein set forth and described.

5. In a roller-skate, the hangers L, circular incline planes *L'*, circular plate M, and circular incline planes N, in combination with screw O for locking and holding the parts in position, in the manner substantially as herein described.

6. In a roller-skate, the hanger L, circular incline planes *L'*, circular plate M, circular in-

cline planes N, and rubber B, in combination with screw O and washer *c*, constructed and operated for the purposes set forth, and in the manner substantially as herein described.

7. In a roller-skate, the plate *m*, having shoulders T T' T², flange U, slot S, and tooth *g*, in combination with hangers L, slot Q, notches *e*, and screw O, for the purposes and in the manner substantially as herein set forth and described.

8. In a roller-skate, the hanger L and notches *e*, in combination with the circular plate M, slot Q in hanger, and screw O, substantially as herein set forth and described.

9. In a roller-skate, the plate *m*, slot S therein, and tooth *g* thereon, in combination with the hanger L, plate M, tooth *m'*, and notches *e* on the inside of hanger L, for the purposes and in the manner substantially as herein set forth and described.

10. In a roller-skate, the floor-wheels E', axle E, axle-support H, and rocking plate I, in combination with rubber B, hanger L, notches *g* in hanger, circular anti-friction plate *c*, screw O, plate *m*, having tooth *m'* thereon, and notches *e* in hanger, and skate-plate A, constructed substantially as herein set forth and described.

11. In a roller-skate, the floor-wheels E', axle E, support H, rocking plate I, rubber spring B, and anti-friction plate *c*, in combination with hanger L, screw O, plate *m*, strap-holder *a*, vertical forked lug *b*, and straps C D, constructed substantially as herein set forth, and for the purposes specified.

12. In a roller-skate, the hanger L, plate M, holes *m*, continuous circular incline plane N, and continuous circular incline plane *L'*, in combination with the rubber B, rocking plate I, pin V, axle E, axle-support H, and floor-wheels E', arranged, constructed, and operated together, for the purposes and in the manner substantially as herein set forth and described.

In testimony whereof I have hereunto set my hand and seal this 30th day of June, 1884.

HARRISON OGBORN.

Witnesses:

M. F. HALLECK,
T. F. HOLDEN.

(No Model.)

H. T. LINCOLN.

ROLLER SKATE.

No. 304,014.

Patented Aug. 26, 1884.

FIG. 1.

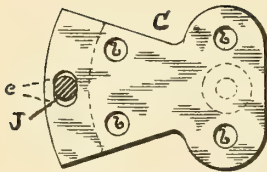
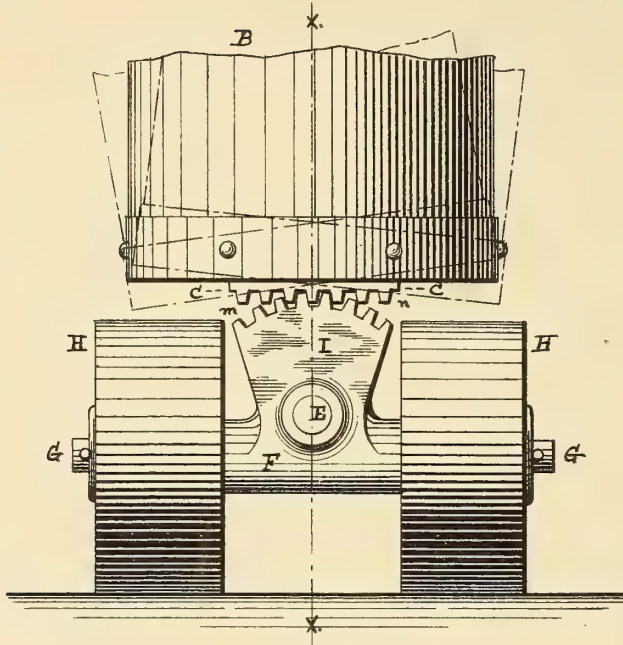


FIG. 3.

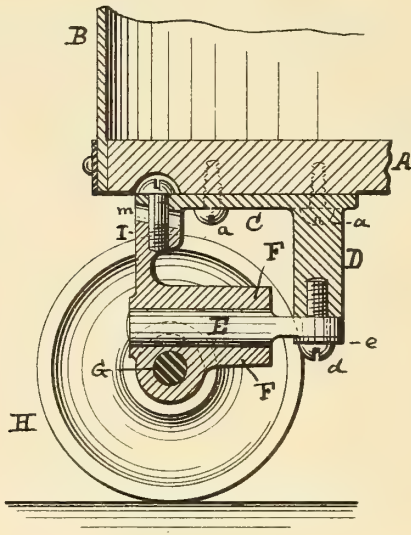


FIG. 2.

WITNESSES,

Wm R Pore

Jesse B. Lincoln

INVENTOR

Harvey S. Lincoln

UNITED STATES PATENT OFFICE.

HARVEY T. LINCOLN, OF PROVIDENCE, RHODE ISLAND.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 304,014, dated August 26, 1884.

Application filed March 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, HARVEY T. LINCOLN, of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Roller-Skates; and I declare the following to be a specification thereof, reference being had to the accompanying drawings.

Like letters indicate like parts.

Figure 1 is an end elevation of my improved skate. Fig. 2 is a vertical section on line *x* of Fig. 1. Fig. 3 is a top plan of the bed-plate, showing the upper side thereof and illustrating the action of the stop-pin.

In the drawings, A represents the foot-board, having the heel-strap B fastened thereto in the usual manner.

On the under side of the foot-board A is the bed-plate C, which is fastened to the foot-board by screws *a*, passing through the holes *b*.

At the center of the arc portion of the bed-plate C is a slot, *c*. A stem or hanger, D, cast solid with the bed-plate C, extends downward therefrom at a right angle. The rocker-shaft

E is fastened to the lower end of the hanger D, as shown in Fig. 2, by means of the screw *d*, passing through an eye in the end of said rocker-shaft. The screw *d* enters a bore in the hanger D, and a check-nut, *e*, secures the fastening. A truck, F, has a slight oscillation on the rocker-shaft E, which passes through it, and it supports the axle G in the usual manner, whereon are hung the rollers H. A rocker,

I, cast solid with the truck F, in the sector shape shown, extends upward from the truck F, at a right angle transversely with the rocker-shaft bore, and has its bearing at its upper end against the lower surface of the bed-plate C. The upper end of the rocker I is formed in a curve or arc, as shown in Fig. 1, and is there provided with beveled gears *m*, to engage with corresponding gears, *n*, on the outer portion of the bed-plate C. A screw, J, passing through the slot *c* of the bed-plate C, enters firmly the rocker I, as shown in Fig. 2, and the under side of the foot-board A is countersunk or cut away to make room for its head.

The advantage of my improved device is that it entirely dispenses with the springs,

which hitherto have been considered necessary in the construction of roller-skates.

The various inclinations of the foot-board necessarily assumed in turning a corner or describing a curve in skating, and which hitherto have been obtained by the depression of a rubber cushion or spring interposed between the foot-board and the truck, are in my improved skate secured simply by the rocking of the bed-plate C upon the curved upper end of the rocker I, as shown in dotted lines in Fig. 1. To limit such rocking motion to a safe degree, the stop-pin J is used, which has a lateral play as far as is allowed by the slot *c* of the bed-plate C. Said pin J, being screwed firmly into the rocker I, moves laterally with it until it strikes against the end of the slot *c*, thus limiting the oscillation. It will be seen that the truck F has a slight rotary motion upon the rocker-shaft E, and that the bearing of the bed-plate C upon the end of the rocker I allows the automatic adjustment of the skate to the truck, as the skater maintains his equilibrium in whatever position.

In the use of skates provided with spring-trucks it is found that the tension of the spring rapidly increases by its compression as the foot is tipped sidewise, and therefore such springs interfere with the free movements of the foot and ankle by the resistance of such increased tension; but my improved skate, having no springs, turns easily and with uniform pressure, thereby enabling free and unrestricted use of the foot and ankle, and consequently it is better adapted than the ordinary roller-skate for use in fancy or trick skating.

I have shown the rocker and bed-plate provided with beveled gears *n m*, to engage each other, but such gearing is not absolutely essential, and good results may be obtained if the curved end of the rocker I is smooth, bearing against a plane surface of the bed-plate C; but such a construction is equally within my invention, the characteristic feature of which is the use of a curved rocker bearing against a bed-plate, thereby dispensing with the use of all springs.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. In a roller-skate, the combination of the

foot-board A, having a slotted bed-plate, C, provided with a hanger, D, the truck F, provided with a rocker, I, that has a direct bearing on the bed-plate without the interposition of springs, the rocker shaft E, secured to the lower end of the hanger by means of a screw, *d*, and the stop-pin J, for connecting the rocker and slotted bed-plate, substantially as shown and described.

2. In a roller-skate, the combination with the bed-plate C, having hanger D and slot *c*, of the truck F, mounted on a rocker-shaft, E, connected to said hanger and provided with a rocker, I, having a fixed stop-pin, J, for engaging the slot *c*, the head of said pin being countersunk in the bottom of the bed-plate, substantially as shown and described.

3. In a roller-skate, the combination, with the bed-plate C, having a hanger, D, of the rocker-shaft E, connected to said hanger by a screw, *d*, and check-nut *e*, and the truck F,

mounted on said shaft and provided with a fixed rocker, I, the upper end of which is curved and has a direct bearing on the under side of the bed-plate, substantially as shown and described.

4. The roller-skate herein described, consisting of the foot-board A, the bed-plate C, secured to said board by screws *a a*, and having hanger D, slot *c*, and segmental gear *n*, the rocker-shaft E, secured to the hanger by screw *d* and check-nut *e*, the truck F, having a slight oscillation on said shaft and provided with axle G, rollers H, and a fixed rocker, I, having a segmental gear, *m*, and the fixed stop-pin J, secured to the rocker and engaged in the slot *c*, substantially as set forth.

HARVEY T. LINCOLN.

Witnesses:

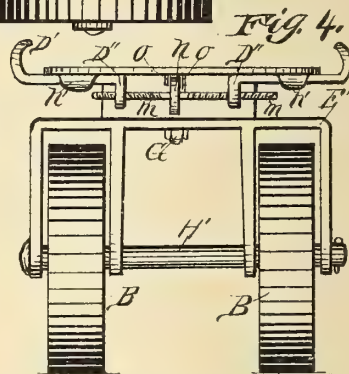
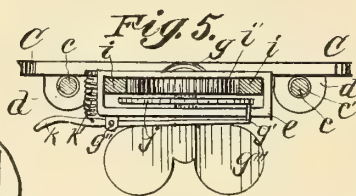
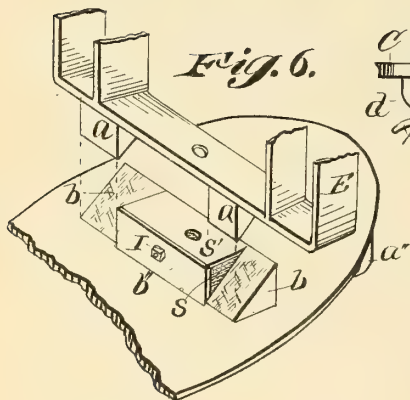
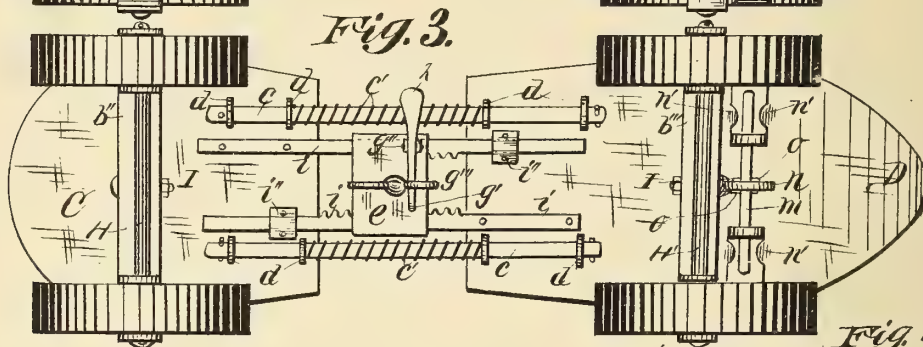
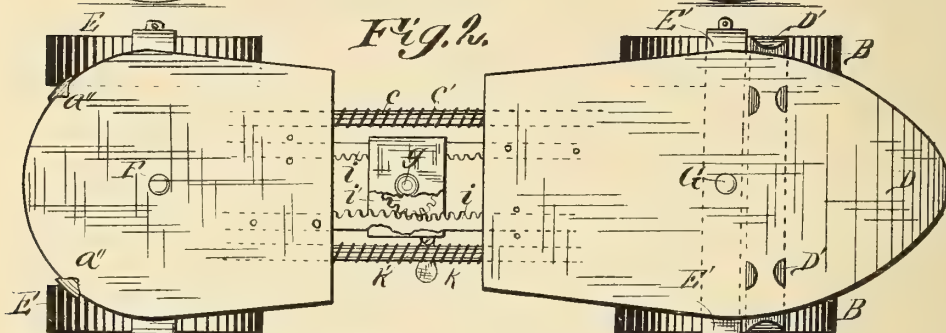
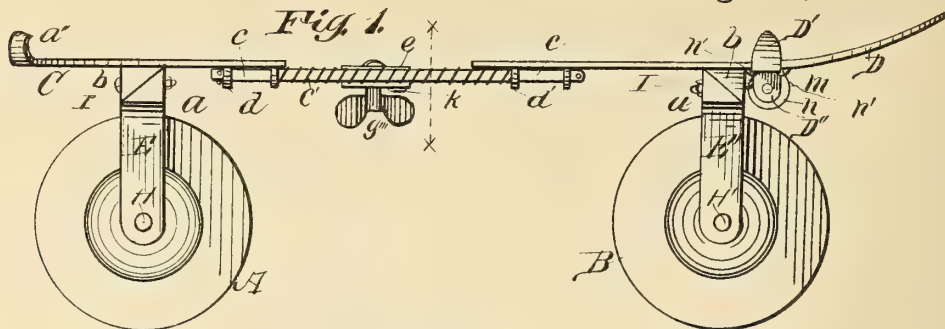
WARREN R. PERCE,
JESSE B. LINCOLN.

(No Model.)

R. C. REID.
ROLLER SKATE.

No. 304,031.

Patented Aug. 26, 1884.



Robert C. Reid

WITNESSES:

C. E. Adamson
L. A. Adamson.

INVENTOR.

BY *Chas. E. Adamson*
ATTORNEY.

UNITED STATES PATENT OFFICE.

ROBERT C. REID, OF LYONS, ASSIGNOR OF ONE-HALF TO RANDSOM A. REASE, OF MUNCIE, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 304,031, dated August 26, 1884.

Application filed March 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT C. REID, a citizen of the United States, residing at Lyons, in the county of Green and State of Indiana, have invented a new and useful Roller-Skate, of which the following is a specification.

My invention relates to improvements in roller-skates; and the objects of my improvements are to construct a roller-skate having an adjustable bottom mechanism, so that the skate is secured to the shoe or boot by drawing the heel and toe plates together, and to construct a cheap and durable skate. I attain these objects by the mechanism illustrated by the accompanying drawings, in which—

Figure 1 is a side view of my invention. Fig. 2 is a view of the upper side of the skate bottom, and Fig. 3 is a view of the under side of the same. Fig. 4 is a view looking at the front end of a skate. Fig. 5 is a cross-section of the adjustable bottom part, taken on line *x x*; and Fig. 6 is a detail view of the hanger.

Similar letters refer to similar parts throughout the several views.

The rollers A B are secured to the hangers E E' by axles H H' in the usual manner. The upper sides of the hangers are provided with inclines *a*, as shown in Figs. 1 and 6. The under sides of the heel and toe plates are provided with similar inclines, *b*, with a piece of rubber, *s*, placed between them. The said rubber is held in place by metallic sides *b''*, bolt I, and by a metallic plate, *s'*, which works between the rubber and the hanger. When the hangers are in place, they are held by bolts F G. The under side of the connecting ends of the heel and toe plates are provided with lugs *d* and loops *i''*, through which the pins *c* and cog-bars *i* slide. (Most clearly shown in Fig. 3.) A coil-spring, *c'*, is placed around the pin *c*, as shown, so that they are inclined to press the heel and toe plates apart. One of the cog-bars is secured to the toe-plate D, and the other to the heel-plate C, as shown in Fig. 3, and work on each side of the cog-wheel *i'*. The said wheel is made to engage with the cogs in the bars, and it is held in place in the sleeve by the journal *g*, which passes through the upper and lower portion of the sleeve, and provided with a thumb-head on its lower end, so that it can be easily turned by the thumb and finger. Just under the cog-wheel *i* the ratchet-wheel *j* is secured, as shown in Fig. 5. A prong, *g'*, formed on

one end of the lever *k*, is pressed into the notches in the wheel *j* by a spring, *k'*, as shown in Figs. 2 and 5. The lever *k* is pivoted to lugs *g''*, as shown, so that by pulling up on the outward end the prong *g'* is moved down out of the wheel *j*, allowing the springs *c'* to press the heel and toe plates apart until the keys in the ends of pins *c* touch the lugs *d*. The toe-plate D is provided with toe-clamps D' D'', as shown. The said clamps are held to the toe-plate by lugs *n'*, which allow the said clamps to slide in and out freely. A screw, *m*, is passed through the lower ends, D'', of the clamps, and it is provided with a right and left thread and a center nut or collar, *n*. The said screw moves the clamps in opposite directions, (in and out,) and it is prevented from a longitudinal movement by the downward projections *o* on each side of the collar *n*, all as shown.

As thus constructed, the skate is secured to the foot by placing it on the shoe bottom, and first drawing the toe-clamps together by turning the collar *n* with the thumb and finger. Then by turning the thumb-head *g'''* in the same way the heel and toe plates are drawn together sufficient to press the heel-lugs *a''* into the shoe-heel, and, sliding the toe-clamps to a wider part of the shoe-sole, securely wedging the shoe between the said heel and toe-clamps. The bolts F G allow the hangers to turn slightly, and a side pressure or lateral inclination of the foot causes the skate to turn or run in a curved line, as the case with all scientific skates, and the rubbers *s* cause the hangers to assume their natural position, or to stand parallel with each other.

Having thus described my invention, I claim the following and desire to secure the same by Letters Patent:

1. In a roller-skate, the hangers E E', inclines *a b*, sides *b''*, rubbers *s*, plate *s'*, and bolt I, in combination with the heel and toe plates, all for the purpose set forth.
2. The sleeve *e*, carrying a cog-wheel, *i''*, wheel *j*, journal *g g''*, pawl *g'*, lever *k*, and spring *k'*, in combination with the pins *c*, lugs *d*, bars *i*, and loops *i''*, all for the purpose set forth.

ROBERT C. REID.

Witnesses:

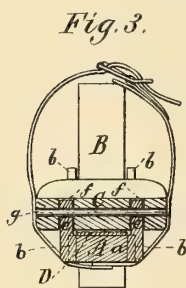
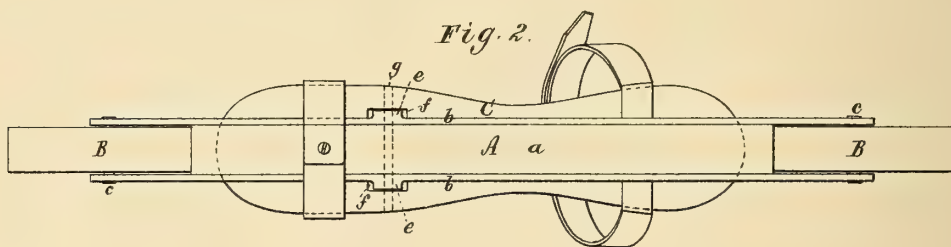
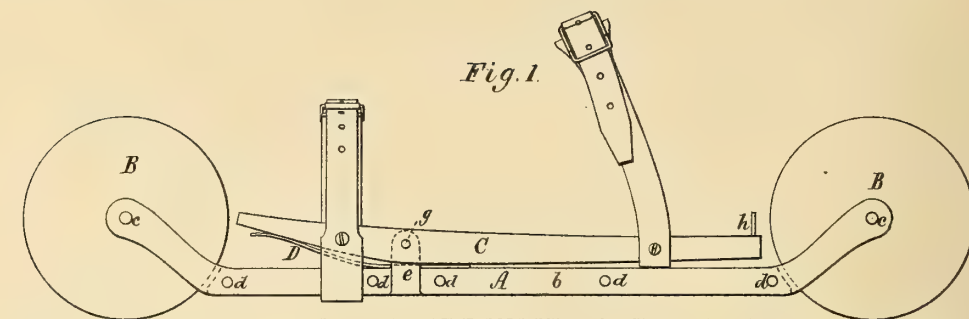
RANDSOM A. REASE,
WM. R. BROTHERTON.

(No Model.)

R. ADAMS.
ROLLER SKATE.

No. 304,893.

Patented Sept. 9, 1884.



Witnesses
S. N. Piper
E. B. Pratt

Inventor
Richard Adams.
by R. M. Eddy att'y.

UNITED STATES PATENT OFFICE.

RICHARD ADAMS, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 304,893, dated September 9, 1884.

Application filed April 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, RICHARD ADAMS, of Boston, in the county of Suffolk, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Roller-Skates; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, Fig. 2 a bottom view, and Fig. 3 a transverse section, of a skate having my invention, the nature of which is defined in the claims hereinafter presented.

The skate is bicycular—that is, it has two wheels, one of which is in advance and the other in rear of the foot-rest. The said wheels are supported in the body, which is furcated at opposite ends of it to receive them. The foot-rest is pivoted to the body, and has between its toe and the body a spring, which, fastened to the body, bears upward against the foot-rest, the latter being provided with straps or suitable fastenings for securing it to the foot of a person.

In the drawings, A is the skate-body, which, as shown, is composed of a bar, *a*, of wood and two metallic bars, *b b*, applied to opposite sides of it, each of the bars *b* at the ends of the bar *a* being bent upward or inclined, as represented. The two wheels B B are arranged one in advance and the other in rear of the bar *a* and between the metallic bars *b b*, into which the axles or journals *c c* of the wheels are extended. The three bars *a*, *b*, and *b* are secured together by rivets *d* going through them, and there is extended upward from each bar *b* an ear, *e*. These ears enter slots *f* in the foot-rest C, a pin, *g*, going through such and the said ears, whereby the foot-rest becomes pivoted to the body A. A spring, D, fastened to the body, projects forward of and between the two ears, and bears upward against the foot-rest near its toe or front end. The two wheels reach somewhat below the body, and also above the foot-rest, there being to the latter, at its rear end, an abutment, *h*, for the heel of the boot or shoe of a person to bear against, in order to keep the boot or shoe from contact with the rear wheel. By having a foot-rest a separate piece from the

body and pivoted thereto, so as to enable the foot-rest to tilt lengthwise of it relatively to the body, and by having the pivotal devices of the two arranged at that part of the foot-rest which is immediately under the junction of the phalanges and metatarsus of the foot of person when sustained by the foot-rest, a person while skating can, without lifting either wheel from the ground, raise his foot and the rest at the heel, as he usually does in walking. The spring subsequently operates to tip the foot-rest back upon the body. By having the foot-rest separated from and pivoted to the body, and by having the spring between them, as described, a person can skate with much greater ease and convenience than he could were his foot to rest directly on the body of the skate.

Wheels of large diameter can be used in the above-described skate, so as to cause it to run with ease and at a high velocity or speed.

I do not claim in either a carriage or a roller skate a platform provided with wheels arranged at and pivoted to it at its opposite ends, whether the platform be in part or in whole below a line joining the axes of the wheels; nor do I claim a pedicycle constructed as represented in the United States Patent No. 278,185.

I claim—

1. The combination of the foot-rest, pivoted to the wheel-supporting portion or body of the skate, with such portion or body, and with the spring arranged between the two, and to press upward the foot-rest in front of its connection with the body, all being substantially as set forth.

2. The combination of the two metallic wheel-supporting bars *b*, bent upward, and provided with ears *e*, as described, with the bar *a*, arranged between and fastened to them, (the said bars *b*,) and with the foot-rest connected, as explained, with the ears, there being between and pivoted to the said metallic bars two wheels, and between the foot-rest and the median bar under it a spring to operate such rest, as explained.

RICHARD ADAMS.

Witnesses:

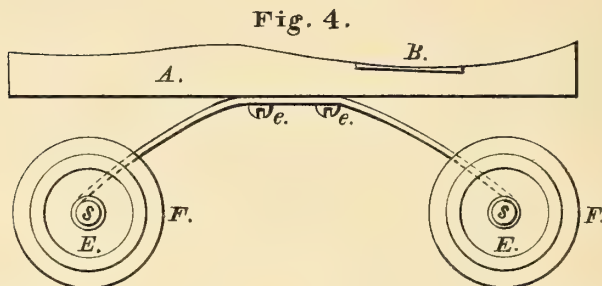
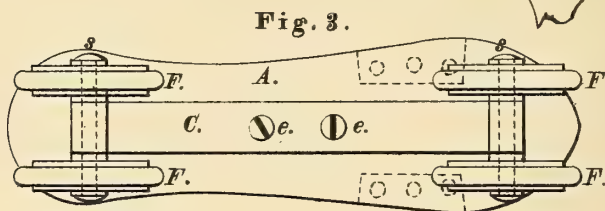
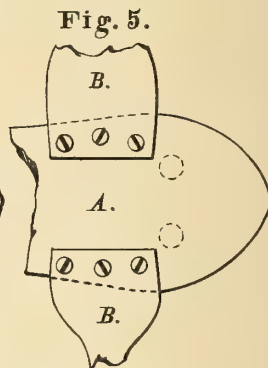
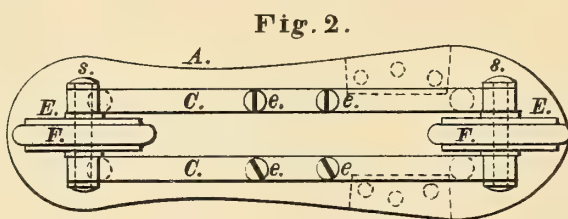
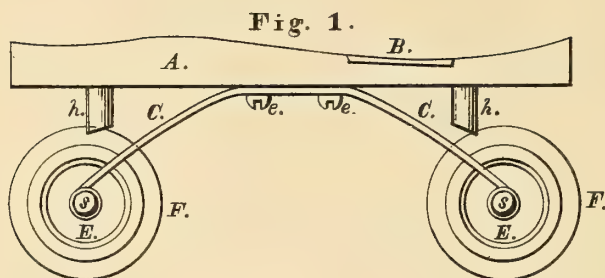
R. H. EDDY,
E. B. PRATT.

(No Model.)

T. MITCHELL.
ROLLER SPRING SKATE.

No. 304,949.

Patented Sept. 9, 1884.



WITNESSES:

Wm. B. Radenorth
John L. Mitchell.

INVENTOR:

Thomas Mitchell.

UNITED STATES PATENT OFFICE.

THOMAS MITCHELL, OF BROOKLYN, NEW YORK.

ROLLER-SPRING SKATE.

SPECIFICATION forming part of Letters Patent No. 304,949, dated September 9, 1884.

Application filed April 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MITCHELL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improved Roller-Spring Skate, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention consists of a roller-spring skate in which the rollers are journaled directly in the forward and rear ends of a spring or springs attached to the under side of the skate-body without intermediate bearings, and in certain details of construction, as hereinafter more specifically described and claimed.

In the annexed drawings, Figure 1 is a side elevation of my improved roller-skaté provided with two springs and two wheels or rollers. Fig. 2 is a bottom plan view of the same. Fig. 3 is a bottom plan view of my single-spring skate with four wheels or rollers. Fig. 4 is a side view of the same; and Fig. 5 is an enlarged plan view of the forward part of the skate, showing the attachment of the front strap.

Like letters designate like parts.

The skate-body A is made of wood or other suitable material in any of the usual forms, and is provided with a front strap, B, the ends of which are let into the skate-body, on the upper side thereof, the full thickness of the strap, as shown, and secured by any convenient means, so as to clasp the foot firmly, the strap being thus readily self-adjustable to various sizes of foot without exerting undue pressure.

To the under side of the skate-body A, at or near its center, are secured one or more springs, C C, by means of screws or rivets *e e* or other suitable fastenings. If desired, two springs, C C, may be used, as shown in Fig. 2; or only one spring may be employed, as shown in Fig. 3.

The wheels or rollers E E are journaled directly in the curved ends of the springs C by means of axles or journals *s s*, attached to or hung in said springs without intermediate

bearings, thus combining strength and simplicity of construction. In some instances the rollers of skates have heretofore been journaled in lugs or bearings attached to the ends of springs; but such bearings are liable to become detached. This difficulty is obviated by hanging the rollers directly in the ends of the springs, a construction which involves less parts than hitherto required, besides effecting considerable economy in cost, as well as adding to the durability, lightness, and finish of the skate.

It will be observed that the springs C are bowed or curved downward at each end, and when two springs are employed they are secured to the skate-body in parallel longitudinal lines.

Two rollers are employed with a skate having two springs, said rollers being journaled—one at each end of the skate—between the ends of the parallel springs, as shown in Fig. 2. When the skate is provided with four rollers, as shown in Fig. 3, only one spring is required, its width, however, being slightly increased. The axles or journals of the wheels or rollers, in either case, are attached or hung directly in the curved ends of the spring or springs without the intervention of intermediate lugs or bearings, as commonly employed, and are made to hug the springs so firmly as not to revolve with the friction of the wheels. The two-roller or four-roller spring-skates, as the case may be, thus combine strength, durability, and lightness of structure with the smallest practicable number of parts, and is therefore not liable to get out of order.

The wheels E E may be made of any suitable material, and are preferably provided on the periphery with elastic bands F F, that are shrunk or sprung thereon, so as to increase the friction upon the floor or sidewalk, and lessen the noise of running.

In order to prevent the peripheries of the wheels or rollers from coming in contact with the skate-body under sudden jars, stops or buffers *h h* are attached to the under side of the skate near each end, as shown in Fig. 1.

A roller-skaté of this construction has the

advantage of an easy carriage, with little danger of breaking the wheels by sudden contact with abrupt ridges or inequalities in the roadway.

Having thus described my invention, what I
5 claim as new, and desire to secure by Letters Patent, is—

A roller-skate consisting of the body A, having buffers *h h*, and one or two longitudinal springs, *C C*, the axles *s s*, attached or hung

directly in the ends of said spring or springs 10 without intermediate bearings, and the wheels *E E*, mounted on said axles, substantially as shown and described.

THOMAS MITCHELL.

Witnesses:

WM. B. WADMOUTH,

J. L. MITCHELL.

(No Model.)

T. H. DEAN.

ROLLER SKATE.

No. 305,434.

Patented Sept. 23, 1884.

Fig. 1.

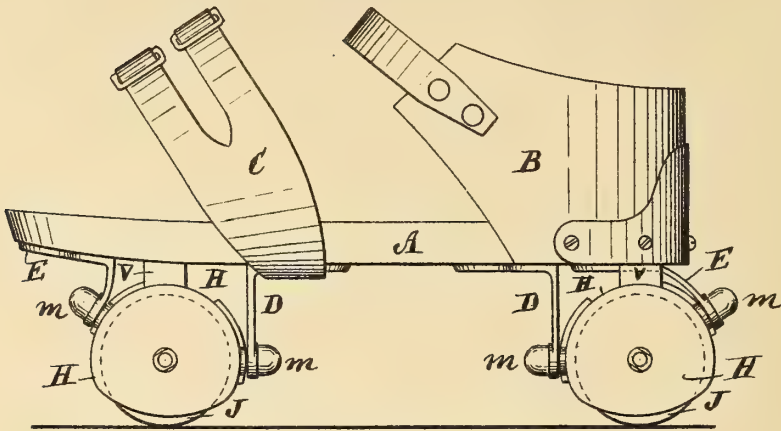


Fig. 2.

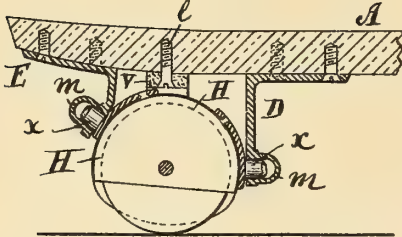


Fig. 3.

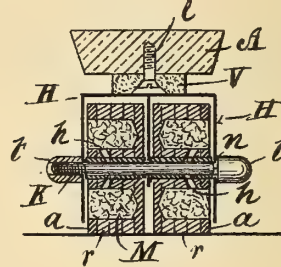


Fig. 4.

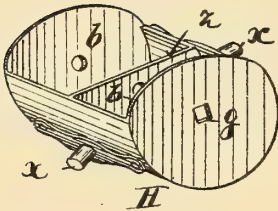


Fig. 5.

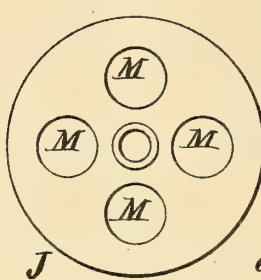
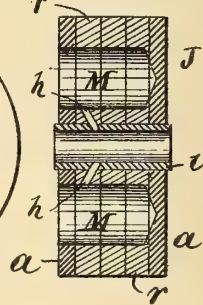


Fig. 6.



Witnesses.

L. C. Briggs
L. J. White

Inventor.

Thomas H. Dean
Per C. C. Shaw
Attorney

UNITED STATES PATENT OFFICE.

THOMAS H. DEAN, OF EASTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 305,434, dated September 23, 1884.

Application filed May 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. DEAN, of Easton, in the county of Bristol, State of Massachusetts, have invented a certain new and useful Improvement in Roller-Skates, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved skate; Fig. 2, a vertical longitudinal section of the same, a portion of the body being represented as broken away. Fig. 3, a vertical transverse section taken through the center of the forward axle; Fig. 4, an isometrical perspective view of the guard and roller carriage reversed; Fig. 5, an enlarged side elevation of one of the rollers or trucks detached, and Fig. 6 a vertical transverse section of the same.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of roller-skates which are provided with a pair of rollers at either end, and a spring interposed between the axle of either pair of rollers and the body of the skate; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more desirable and effective article of this character is produced than is now in ordinary use. In nearly all skates of this character much difficulty is experienced, when they are used by ladies, in keeping the oil with which the axles are lubricated from coming into contact with their skirts, as well as properly lubricating the axles. The rollers or trucks are also usually composed of solid box-wood or similar materials, which are liable to slip on the floor in turning, wear unevenly, and produce a disagreeable noise.

To obviate these and other objections, simplify the construction, and increase the utility of the skate is the design of my present invention, the nature and operation of which will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body of

the skate, B the heel-strap, and C the toe-strap, all of these parts being of the ordinary construction, and not in and of themselves claimed broadly herein.

Secured to the under side of the forward end of the body A there are two downwardly-projecting brackets, D E, a corresponding pair of brackets being also secured to the body at the rear end or heel, as best seen in Fig. 1. A carriage or guard, H, provided with a centrally-disposed outwardly-projecting stud, *x*, on either side is journaled in each pair of the brackets D E, the studs projecting into sockets *m* formed in the brackets, and by which the studs are also covered. The guard is divided into two chambers or compartments by the transverse partition *z*, and the trucks J are journaled in the guard, one in each compartment, by means of the axle K, which passes through suitable holes, *b*, in the side walls of the guard and partition *z*, and is provided at either end with a cap-nut, *t*. An elongated rubber cushion or spring, *v*, is disposed between the top of each of the guards H and the bottom of the body A, these cushions being held in position by screws 1. The body of each of the rollers or trucks is composed of annular leather plates, and the sides *a* of corresponding plates of green hide, the plates being connected by suitable rivets. (Not shown.)

A series of pockets, M, are formed in the body of each of the rollers, the pockets being filled with cotton waste or some other suitable absorbent for the oil, and provided with ducts *h* which extend through the bushing or axle-box *i* to the axle K, the cotton being kept properly saturated with the lubricant when the skate is in use. The plates of leather and green hide form a very durable wheel, and one which runs with comparatively little noise. The cotton in the pockets M being saturated with oil keeps the axles constantly and uniformly lubricated. The guards extend nearly to the floor and effectually prevent the rollers from being brought into contact with the clothing of the person using the skates, or that of others in the vicinity. The spring interposed between the guard and body of the skate permits the body of the skate to be rocked or canted laterally on the pivots or studs in turning or skating on a curve. The axle-hole in the guard is squared in one

of the heads of the guard, as shown at *g* in Fig. 4, and the axle *K* has one of its ends squared, as shown at *n*, Fig. 3, to fit said hole, thereby preventing the axle from turning in the guard and the nuts *t* from working loose.

I do not confine myself to constructing the rollers of leather and green hide or providing them with pockets and ducts, as described, as they may be made of box-wood or other suitable material, and the pockets and ducts omitted, if desired. Neither do I confine myself to constructing the guard with the partition *z* or squared hole *g*, or to forming the sockets *m* in such a manner as to cover the studs *x*.
 15 The studs may also be formed on the brackets and proper holes for receiving them in the guard, if desired.

Having thus explained my invention, what I claim is—

20 1. In a roller-skate, the combination of the following instrumentalities, to wit: a body or foot-piece, means for attaching the body or foot-piece to the foot of the wearer, two downwardly-projecting brackets at or near either
 25 end of the body or foot-piece, a guard or carriage journaled in either pair of said brackets, a pair of trucks or rollers journaled in either of said guards, and an elastic cushion or spring, the guards being adapted to cover
 30 all parts of the rollers except their lower or

bearing edges and to rock laterally in the brackets, the rollers journaled at right angles to the axial line of the guard, and the spring interposed between the guard and body of the skate and adapted to keep the body in a horizontal position, substantially as described. 35

2. In a roller-skate, the brackets *D E*, provided with the covered sockets *m*, for receiving the studs or journals of the carriage *H*, substantially as set forth. 40

3. In a roller-skate, the guard *H*, provided with the studs *x*, in combination with the rollers *J*, axle *K*, brackets *D E*, and spring *v*, substantially as described.

4. The improved roller-skate herein described, the same consisting of the body or foot-piece *A*, provided with the straps *B C*, the brackets *D E*, provided with the sockets *m*, the guard *H*, provided with the studs *x*, partition *z*, and holes for receiving the axle, 50 the axle *K*, provided with the nuts *t*, the spring *v*, provided with the screw *l*, and the rollers *J*, composed of leather and green hide, and provided with the pockets *M* and ducts *h*, constructed, combined, and arranged to operate substantially as described. 55

THOMAS H. DEAN.

Witnesses:

C. A. SHAW,

L. J. WHITE.

(No Model.)

F. E. VANDERCOOK.

ROLLER SKATE.

No. 305,644.

Patented Sept. 23, 1884.

Fig 1

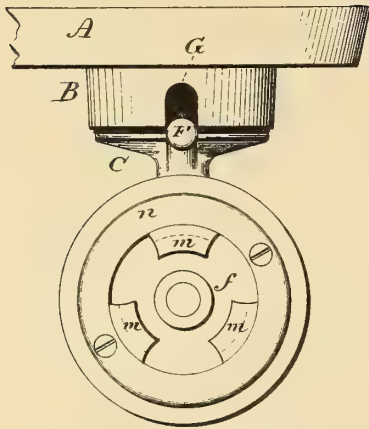


Fig 2

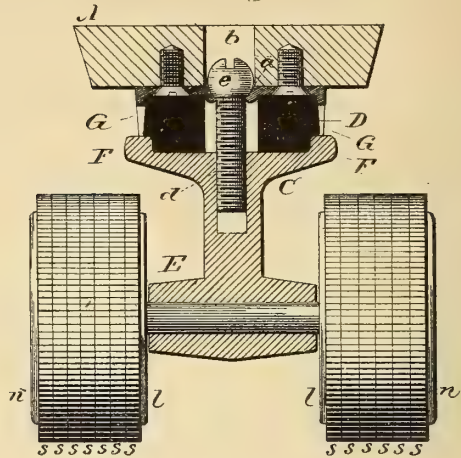


Fig 3

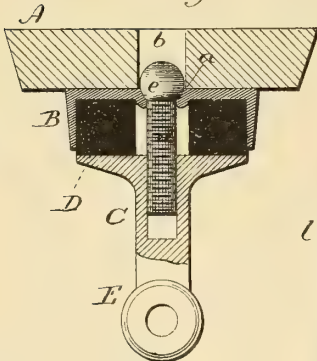


Fig 4

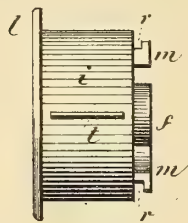


Fig 5

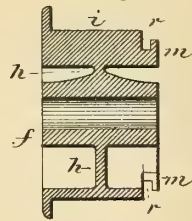


Fig 6



Fig 7

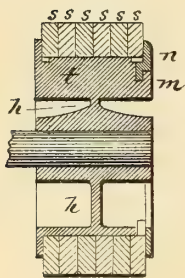
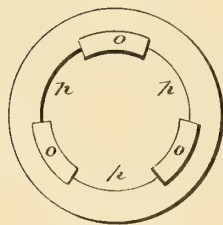


Fig 8



Witnesses.
J. H. Shumway
J. C. Clark

Frank E. Vandercook
Inventor
By Atty.
J. C. Clark

UNITED STATES PATENT OFFICE.

FRANK E. VANDERCOOK, OF ANSONIA, CONNECTICUT, ASSIGNOR OF ONE-HALF TO HENRY C. COOK, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 305,644, dated September 23, 1884.

Application filed April 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. VANDERCOOK, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Roller-Skates; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same,
10 and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of a portion of the foot-piece, showing one of the saddles; Fig. 2, a
15 transverse section through the saddle; Fig. 3, a vertical section at right angles to the section of Fig. 2; Figs. 4, 5, 6, 7, and 8, detached views of the roller, illustrating its construction.

This invention relates to an improvement
20 in the construction of roller-skates, with special reference to the method of hanging the rollers, whereby a certain amount of elasticity is introduced between the axle and the foot-piece, and also in the construction of the rollers;
25 and the invention consists in the construction, as hereinafter described, and more particularly recited in the claims.

In illustrating the method of hanging the rollers to the foot-piece I show only a single
30 pair of rollers, or one attachment. It will be understood, however, that this is or may be applied alike to both pairs of rollers.

A represents the foot-piece, of any of the known constructions; B, an inverted cup-shaped socket, which is made fast to the under
35 side of the foot-piece by screws or otherwise, with a central hole through it, forming a concave seat, *a*, on the upper side. Through the foot-piece is a hole, *b*, corresponding to the seat *a* on the socket. C is the saddle, its head or upper surface corresponding to or somewhat less than the internal diameter of the socket B, as seen in Fig. 3. In the socket is
40 an india-rubber or other suitable spring, D, upon which the saddle bears. Through the socket a screw, *d*, extends into the saddle below, its head *e* of ball or spherical shape to fit the corresponding seat, *a*, on the socket. This ball-shaped head and seat permits a universal

movement of the saddle, the spring D yielding
50 for such movement, so that the foot may rock to a considerable extent with relation to the rollers. The spring D yields for such movement, and returns the axle to its proper parallelism when at rest. The spring D yields under the
55 pressure of the foot and gives an elasticity to the skate, and this elasticity may be reduced by compressing the spring, or vice versa, such compression of the spring being produced by turning the screw *d*, which the hole
60 *b* permits to be done without removing the socket from the foot-piece. At the lower end the saddle is provided with a transverse bearing, E, for the axle.

To prevent the saddle from rotating on the
65 screw *d* as a pivot, a lug, F, is formed at diametrically-opposite points on the head of the saddle, which sets into corresponding notches, G, in the sides of the cup. These notches permit the free play up and down of the saddle,
70 but engage the lugs F, so as to prevent rotation.

My improved roller consists of a hub, *f*, through which is a corresponding hole to receive the axle, as seen in Fig. 2. Surrounding this hub and connected to it by a web, *h*,
75 is a metal rim, *i*, concentric with the axle, and of a diameter little less than that of the finished roller. Around this rim, at one end, is a flange, *l*, projecting at right angles to the
80 axis. On the other end are projecting lugs *m*, here shown as three, set inside the periphery of the rim, as seen in Figs. 4 and 5.

n is a collar corresponding to the flange *l* at the opposite end. This collar is recessed on
85 its face, as seen in Fig. 6, its internal diameter being so as to set on over the lugs *m* against the end of the rim *i*, as seen in Fig. 7. From the inside of the recess projections *o* are formed, extending inward, leaving a space, *p*, between
90 such projections, as seen in Fig. 8, these spaces corresponding to the lugs *m*, and so that those spaces will permit the collar to pass on over the lugs. In the outer surface of the lugs *m* is an annular notch, *r*, corresponding
95 to the projections *o* on the collar, and so that when the collar is set on over the lugs it may be turned, and so as to bring the projections *o*

into the notches *m* on the lugs, and thus interlock the collar with the lugs. The periphery of the roller is composed of rings *s*, more or less in number, cut from leather or other suitable material, their internal diameter corresponding to the rim *i*, their external diameter little larger than that of the flange *l* and collar *n*. These rings are first set on over the rim *i*, against the flange *l*, and when the requisite number have been applied the collar *n* is set thereon and forced toward the opposite flange, so as to compress the rings *s* between them, and when suitably compressed the collar is turned to bring the projections *o* into engagement with the notches *m* of the lugs, and thus securely hold the non-metallic periphery upon the roller.

In order to prevent the non-metallic portion from turning on the rim, the rim is constructed with one or more projecting ribs, *t*, as seen in Fig. 7, and the collars have a corresponding notch cut upon their inner surface, so that when set over these ribs the rings cannot turn upon the rim of the roller. By this construction of roller I am enabled to produce a roll presenting a non-metallic surface, the material of which is much thinner than in previous constructions, and therefore less liable to work into irregular shape than where greater depth or thickness is employed.

I claim—

1. In a roller-skate, the combination of the foot-piece constructed with a hole, *b*, vertically through it, the inverted-cup-shaped socket B fixed to the under side of the foot-piece, the saddle C, the head of which corresponds to the interior of said socket, the said saddle carrying the rollers, the spring D in said socket, the screw *d* through the hole in the foot-piece and through the socket into the saddle, the under side of the head of the screw spherical, and a seat on the socket of corresponding shape, substantially as and for the purpose described.

2. The combination of the foot-piece A, inverted-cup-shaped socket B, spring D therein, the sides of the socket constructed with a notch, G, the saddle C, its head corresponding to the spring D, and constructed with a lug, F, corresponding to said notch G, and carrying the rollers, screw *d* through said socket into said saddle, whereby the saddle is held in elastic connection with the foot-piece, substantially as described.

3. The herein-described roller for skates, consisting of the metal hub *f*, the rim *i*, and the flange *l* on one end of said rim, the rim connected to the hub, notched lugs *m* projecting from the end of the rim opposite the flange, all constructed in one and the same piece, combined with the ring-shaped collar *n*, having projections *o* and corresponding notches, *p*, upon its inside, and the non-metallic rings *s*, the said rings set upon the rim against its flange, and the collar forced over the lugs on the opposite end and turned to bring the projection *o* into the notches *r*, substantially as described.

4. The herein-described roller for skates, consisting of the metal hub *f*, the rim *i*, and the flange *l* on one end of said rim, the rim connected to the hub, notched lugs *m* projecting from the end of the rim opposite the flange, all constructed in one and the same piece, combined with the ring-shaped collar *n*, having projections *o* and corresponding notches, *p*, upon its inside, and the non-metallic rings *s*, the said rings set upon the rim against its flange, and the collar forced over the lugs on the opposite end and turned to bring the projection *o* into the notches *r*, the rim constructed with ribs *t* and the non-metallic rings with corresponding notches, substantially as described.

FRANK E. VANDERCOOK.

Witnesses:

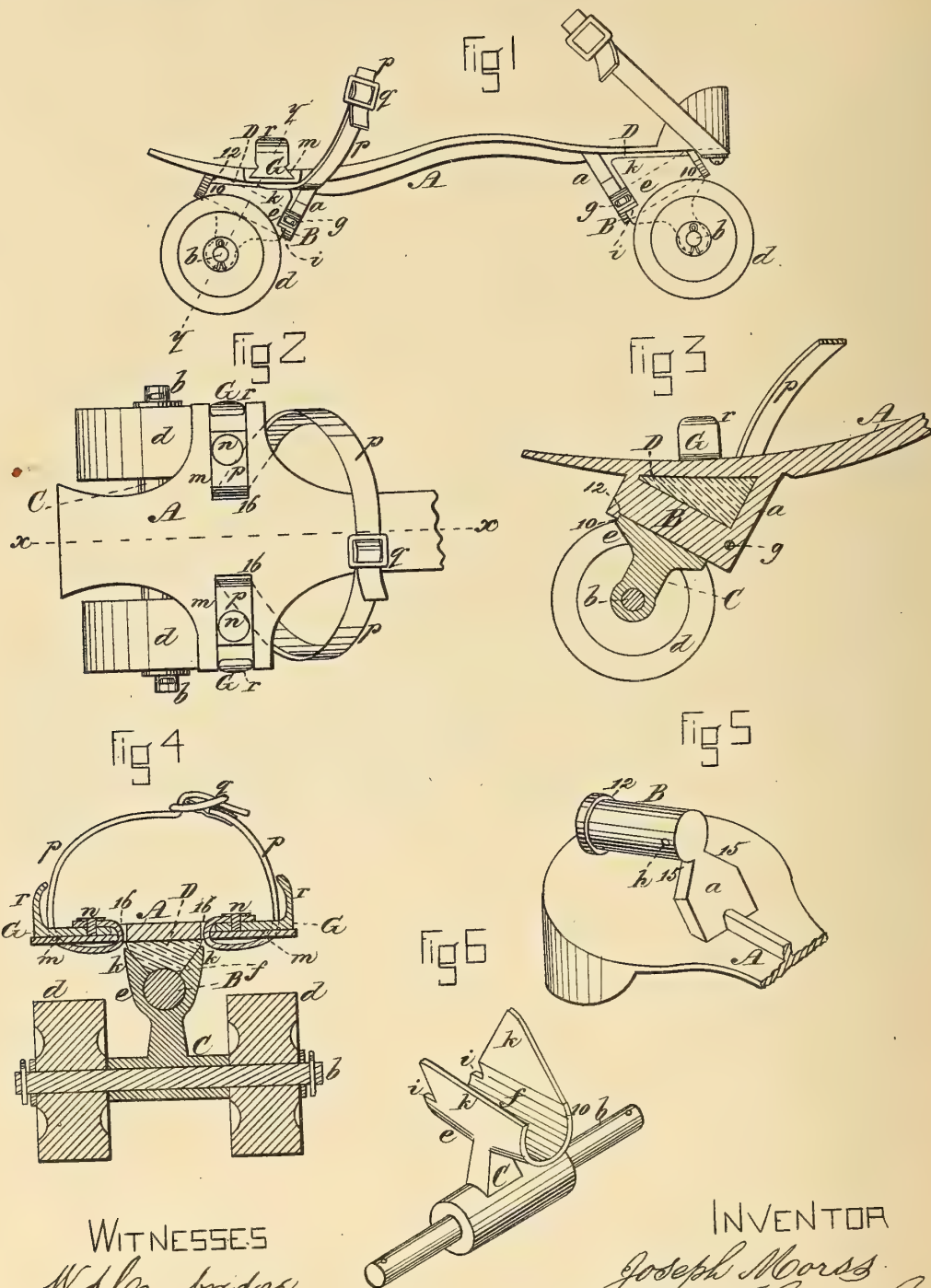
F. W. OTIS,
G. E. COOK.

(No Model.)

J. MORSS.
ROLLER SKATE.

No. 305,837.

Patented Sept. 30, 1884.



WITNESSES
W. J. Cambridge
W. Drayton -

INVENTOR
Joseph Morss
By P. E. Teschemacher
Att'y

UNITED STATES PATENT OFFICE.

JOSEPH MORSS, OF MEDFORD, MASSACHUSETTS, ASSIGNOR TO AMOS B. MORSS, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 305,837, dated September 30, 1884.

Application filed May 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MORSS, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Roller-Skates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a roller-skate constructed in accordance with my invention. Fig. 2 is a plan of a portion of the same, enlarged. Fig. 3 is a longitudinal vertical section on the line *xx* of Fig. 2. Fig. 4 is a section on the line *yy* of Fig. 1, enlarged. Fig. 5 is a perspective view of the rear end of the sole-plate inverted, the roller-carrier and rubber cushion being removed therefrom. Fig. 6 is a perspective view of one of the roller-carriers detached.

My invention relates to an improved means of connecting the oscillating roller-carriers of a roller-skate with the sole or foot plate, whereby the construction is simplified, greater strength and durability secured, and the wear reduced to a minimum; and my invention consists in the combination of a bearing-bar of circular form in cross-section, secured to the bottom of the sole-plate, with a roller-carrier having a sleeve or tubular socket adapted to be slipped over said bearing-bar and oscillate thereon, the sleeve being secured in place upon the bar by a pin or other fastening device, and a rubber cushion being placed between the sole-plate and the roller-carrier, to return the latter to its proper central position after being rocked or oscillated to one side or the other.

My invention also consists in the combination, with the sole-plate, of a pair of sliding foot-clamps operated by straps adapted to be buckled together over the foot, by which construction the clamps, after being adjusted to the width of the foot, are held immovably in place, and all liability of the skate slipping laterally on the foot thus avoided.

In the said drawings, A represents the metallic sole or foot plate of a roller-skate, which is provided on the under side, near each end, with an inclined bearing-bar, B, cast integral

therewith, and of circular form in cross-section, one end of the bar being in contact with or close to the plate A, while the opposite end is separated therefrom, and is connected therewith by an inclined portion, *a*.

C C are the roller-carriers, each of which is provided, as usual, with an axle, *b*, upon the opposite ends of which are mounted the skate-rollers *d d*. Each of the roller-carriers is provided with a sleeve or tubular socket, *e*, which is open from one end to the other on its upper side, as seen at *f*, Fig. 6, and is adapted to be slid over the bearing-bar B, upon which it is free to oscillate as soon as it has cleared the portion *a*, the roller-carrier being secured in place after being slipped upon the bar by means of a spring-pin, *g*, passing through an aperture, *h*, in the said bar, the inner end, 10, of the socket being in contact with a shoulder, 12, at the end of the bar B, which lies close to the plate A, and which shoulder thus serves as a stop for the socket.

On each side of the socket *e*, at one end, is formed a shoulder, *i*, which is brought into contact with the pin *g* as the roller-carrier is rocked, and thus serves as a stop to limit the oscillating movement of the carrier in this direction. The tubular sleeve *e* is provided on each side of the longitudinal opening *f* with an outwardly-extending tapering flange or portion, *k*, which bears firmly upon a wedge-shaped rubber block or cushion, D, which is introduced between the sole-plate A and the oscillating roller-carrier, and serves the usual purpose of holding the carrier firmly and steadily in place and returning it to its proper central position after having been rocked to one side or the other. The inclined portion *a* is cut away on each side, as seen at 15, Fig. 5, to allow of the passage of the flanges *k* of the socket *e* as the latter is slid over the bearing-bar B.

I prefer to so locate the fastening-pin *g* as to permit a slight longitudinal movement of the socket *e* on the bar B, in order that as the socket is oscillated it may ride up on the inclined face of the rubber cushion D toward the thick end thereof, and thus relieve the thin end of the same from undue pressure, and consequently reduce the wear thereon.

The above-described socket and bearing-bar form a strong, simple, and durable joint or connection between the sole-plate and the roller-carrier, while the cost of manufacture is considerably reduced, as the usual pivot-pin is dispensed with, as are also the holes heretofore drilled at the lower ends of the hangers and through the roller-carrier for the passage of the pivot-pin, a considerable saving in labor in fitting up the parts and putting them together being thus effected, as no filing or finishing of the bar B or tubular socket *e* is required, both being smoothly cast in such manner as to fit and properly operate together without subsequent finishing.

The sole-plate A is provided on its upper side, near its front end, with a pair of transverse dovetail grooves, *m m*, in which are fitted to slide therein two foot-clamps, G G, to the inner ends of which are secured at *n n* two leather straps, *p p*, which pass down through suitable apertures, 16, in the sole-plate, and thence over the outer edges of the latter up over the foot of the wearer, where they are secured together by means of a suitable buckle, *q*. When the straps are unbuckled, the foot-clamps G G can be readily adjusted to correspond to the width of the foot by sliding them in the grooves *m*, after which the straps are buckled tightly over the foot, the strain upon the straps causing the upper bent ends, *r*, of the clamps to be drawn toward each other tightly against the edges of the sole of the boot, which is thus confined securely upon the sole-plate A in such a manner as to render it impossible for the skate to have any lateral movement whatever with respect to the foot of the wearer, it being impossible for the clamps to slide in their grooves when the straps are buckled tightly over the foot; and by thus operating the sliding foot-clamps by means of straps instead of by a screw or screws, as heretofore, the construction is greatly simplified

and the cost of manufacture materially reduced.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a roller-skate, the combination of the sole-plate A, provided on its bottom with a bearing-bar, B, of circular form in cross-section, the roller-carrier C, having a sleeve or tubular socket, *e*, open longitudinally at *f* from end to end, and adapted to be slid over the bearing-bar from one end thereof, and having an outwardly-extending flange, *k*, on each side of its opening *f*, means for securing the said sleeve in place upon the bar, and the rubber block or cushion D, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

2. In a roller-skate, the combination, with the inclined bearing-bar B on the under side of the sole-plate A, and the rubber cushion D, of the roller-carrier C, provided with a sleeve or tubular socket, *e*, having a compound longitudinal and oscillating movement upon the said bar B, whereby the thin end of the rubber cushion D is relieved of undue pressure when the roller-carrier is oscillated, substantially as described.

3. In a skate, the combination, with the sole-plate A, of the adjustable foot-clamps G G, sliding in transverse grooves or guides therein, and having secured to their inner ends straps *p p*, passing down through apertures in the sole-plate, and thence up over its outer edges, and adapted to be buckled together over the foot to hold the clamps in place, all operating substantially in the manner and for the purpose described.

Witness my hand this 27th day of May, A. D. 1884.

JOSEPH MORSS.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.

(No Model.)

H. E. GIFFORD.

SKATE ROLLER.

No. 305,915.

Patented Sept. 30, 1884.

Fig. 1.

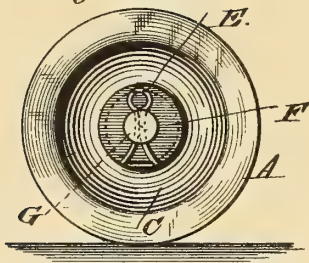
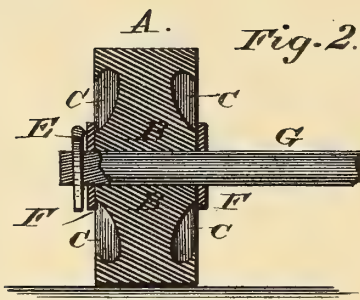


Fig. 2.



WITNESSES:

Wm. L. Dietrich
Arthur L. Moreell

INVENTOR.

Harry E. Gifford
by Louis Rogers & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HARRY E. GIFFORD, OF NEW BEDFORD, MASS., ASSIGNOR TO LOUIS BAGGER
AND AUGUST PETERSON, BOTH OF WASHINGTON, D. C.

SKATE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 305,915, dated September 30, 1884.

Application filed June 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, HARRY E. GIFFORD, a citizen of the United States, of New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Skate-Rollers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of a skate-roller embodying my invention, and Fig. 2 is a cross-sectional view of the same on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to skate-rollers, and has for its object to prevent the oil with which the axle is lubricated from working out upon the periphery or wearing-surface of the roller; and it consists in the improved construction and combination of parts of the same, as will be hereinafter more fully described and claimed.

In the accompanying drawings, A represents a roller, which is mounted upon an axle, G, and has each of its faces provided near the periphery with an annular groove or crease, C, of the form shown in Fig. 2 of the drawings.

B indicates the hub of the roller.

F F represent washers placed upon the axle G, one on either side of the roller A. These washers are each of a greater diameter than the faces of the hub with which they come in contact, so as to form a projecting rim or flange when in contact with the hub, as will be clearly seen by reference to Fig. 2 of the drawings.

E indicates spring-keys inserted through holes in the ends of the axle G.

In skate-rollers as ordinarily constructed there is nothing to prevent the oil with which the axle is lubricated from running down the sides of the roller to the edge of its periphery, and in skating the oil works upon the periphery or surface of the roller, thereby rendering the said surface moist and polished, so as to cause the roller to slip while in use, which is a frequent source of falls, &c.

By constructing my improved roller in the manner described the surplus oil from the axle will run down the sides of the roller and be caught in the annular grooves or creases C, from which it will gradually work its way back to the center or hub of the wheel or roller, where it will be caught between the outer faces of the hub B and the washers F F, the washers being made of a greater diameter than the faces of the hub, in order to prevent the oil from escaping over the edge of the washers, as would be the case if the washers were cast as small or smaller than the faces of the hub.

From the foregoing description, taken in connection with the accompanying drawings, the construction of my improved skate-roller will readily be understood without requiring extended explanation.

It will be seen that my improved roller is exceedingly simple in construction, and that it is devoid of all complicated parts which are liable to break or get out of order.

I claim—

1. As an improvement in skate-rollers, the concentric annular ogee-shaped groove or crease C, on each of its sides or faces, near its periphery, adapted to catch the oil as it flows from the center, as and for the purpose shown and set forth.

2 The improved skate-roller herein shown and described, consisting of the cylindrical body A, provided with an annular ogee-shaped groove or crease, C, on each of its sides or faces, near its periphery, substantially as described, for the purpose set forth.

3. The combination of the roller A, provided with an annular ogee-shaped groove or crease, C, on each of its sides or faces, near its periphery, with the washers F F, of larger diameter than the hubs, and adapted to fit against the outer faces of the hub B, all constructed and combined substantially as and for the purpose shown and described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

HARRY E. GIFFORD.

Witnesses:

ARTHUR E. PERRY,
WILLIAM B. SMITH.

(No Model.)

E. HALL.
ROLLER SKATE.

No. 305,919.

Patented Sept. 30, 1884.

Fig. 1.

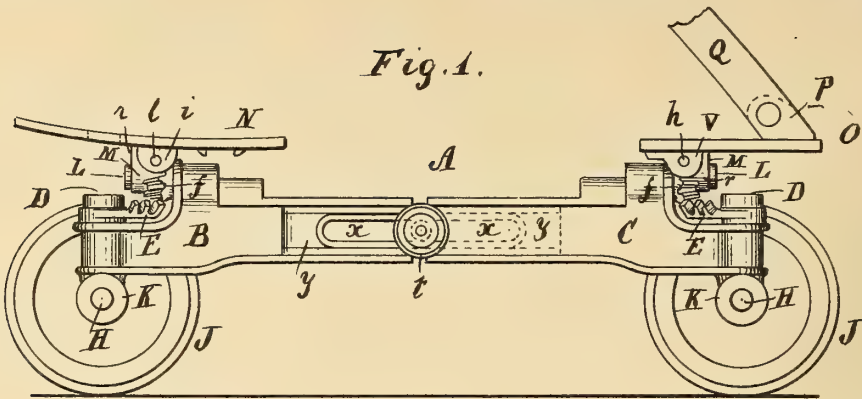


Fig. 2.

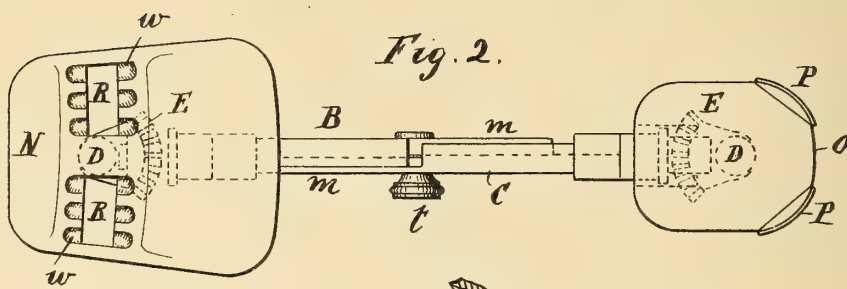


Fig. 3.

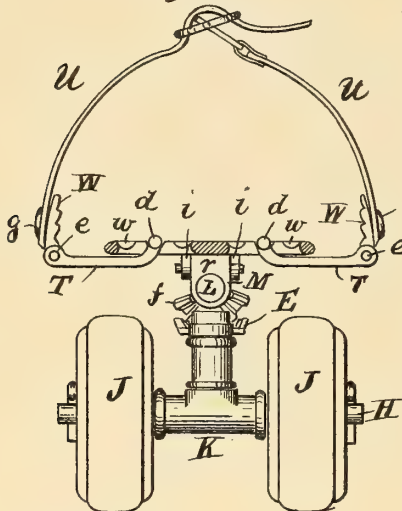


Fig. 4

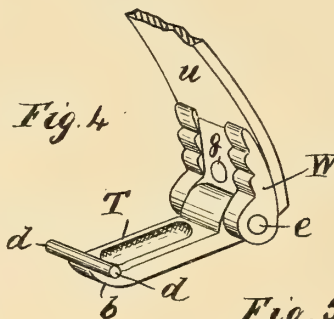
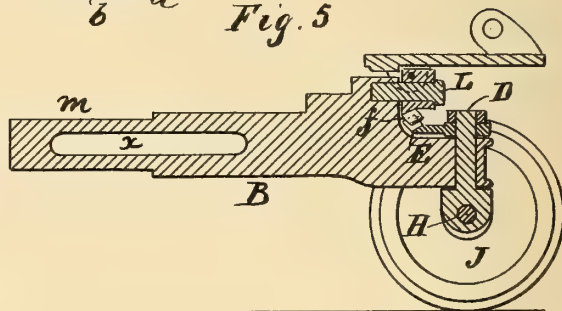


Fig. 5



Witnesses.

E L Tenney
L J White.

Inventor.

Cagar Hall,
Per C. A. Shaw
Attorney.

UNITED STATES PATENT OFFICE.

EDGAR HALL, OF CAMBRIDGE, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 305,919, dated September 30, 1884.

Application filed June 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDGAR HALL, of Cambridge, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Roller-Skates, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved skate with two of the rollers removed; Fig. 2, a top plan view of the same with all of the rollers removed; Fig. 3, a view showing the forward pair of rollers and clamps in end elevation, the toe-piece being represented in vertical transverse section; Fig. 4, a perspective view of one of the clamps detached, its strap being represented as broken off; and Fig. 5, a vertical longitudinal section of the forward portion of the skate.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to the class of skates known as "roller" or "parlor" skates; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more desirable and effective article of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body of the skate, which is divided into two main portions or sections, B C. Each of these sections is provided with an elongated groove, *x*, and with a narrow projection or tongue, *m*, which is adapted to fit a corresponding groove, *y*, in the side of the opposite section, the two sections being united or clamped together by the nut and bolt *t*, by which the body of the skate is rendered extensible. Journalled vertically in the outer end of either of said sections there is a stud, D, having at its upper end the inwardly-projecting segment or rack E, and at its lower end the cross-head K, in which the axle H, carrying the rollers J, is journalled.

Projecting horizontally toward the outer end of either of said sections B C there is a stud, L, and journalled to partially rotate on said stud there is a collet or sleeve, M, provided with an upwardly-projecting flange, *r*, and on its lower side with a series of teeth, *f*, adapted to intermesh with the teeth on the segment E. A toe-piece, N, provided with two downwardly-projecting flanges, *i*, is pivoted to the flange *r* on the collet M of section B by means of the pivot *l*, said toe-piece being adapted to rock or tilt both longitudinally and laterally, or endwise and sidewise. A heel-piece, O, provided with two downwardly-projecting flanges, *v*, is pivoted at *h* to the collet M of section B in substantially the same manner as the toe-piece N, and provided with an upwardly-projecting flange, P, at either side, for attaching the heel-straps Q. The toe-piece is provided with two elongated transversely-arranged slots, R, and with a series of indentations or notches, *w*, along either side of said slots on the upper side of the toe-piece. A bar, T, having its inner end, *b*, curved upwardly and provided with the lateral projections or studs *d*, is jointed to either toe-strap U by means of the short serrated arm W and joint-pin *e*, the arm being riveted to the strap at *g*. The width of the slots R is slightly greater than that of the arms T, and the arms are inserted in said slots from below the toe-piece, being turned edgewise to permit the entrance of the studs *d*, after which they are adjusted, as shown in Fig. 3, with the studs resting in the grooves *w* on either side of the slots.

It will be obvious that the bars T and arms or levers W form a clamp adapted to grasp the sole of the boot or shoe of the wearer of the skate, and thus securely fasten the skate to the foot; also, that the bars T may be moved out or in with respect to the center of the toe-piece to adjust the clamp to any size of boot or shoe.

The object of the toothed collets and racks and their immediately-connected parts is to enable the rollers to be inclined to the longitudinal axial line of the body of the skate in accordance with the inclination of the heel and toe pieces. For instance, if the foot is inclined to the left in turning a curve from right to left, the toe and heel piece will also be correspondingly inclined to the left, the collets M turning on the studs L as these pieces are tilted

laterally. The action, however, of the toe-piece on the forward pair of rollers will be precisely the reverse of that of the heel-piece on the rear pair of rollers, for the reason that the forward rack or segment E stands at the rear of the central axial line of the forward stud D, while the rear rack is disposed forward of the central axial line of the rear stud D, the result being that when the heel and toe pieces are both tipped to the left the forward rollers will be correspondingly turned to the left, but the rear ones will be turned to the right, thereby causing the skate to traverse through the arc of a circle the diameter of which will be great or small in accordance with the degree to which the toe and heel pieces are inclined.

It will be obvious that by having the rollers adapted to follow the exact line of the curve or circle in which the skater is moving, much less exertion will be required in turning curves on the skates than would otherwise be necessary; also, that the skate may be turned to the right or left with equal facility.

I do not confine myself to constructing and arranging the heel and toe pieces in such a manner as to rock endwise; neither do I confine myself to making the body of the skate in two sections or extensible, nor to the use of the adjustable clamp described for securing the toe-piece to the boot or shoe, as all of these features may be varied or substituted by others without entirely departing from the spirit of

my improvement. The teeth of the segment E may also be arched or curved laterally, the teeth on the collet M being correspondingly curved, if desired.

Having thus explained my invention, what I claim is—

1. In a roller-skate, the body A, rendered extensible by the slots *x*, projections *m*, bolt and nut *t*, and grooves *y*, in which said projections rest. substantially as described.

2. In a roller-skate, the toe-piece N, provided with the slots R and grooves or notches *w*, in combination with the bars T, studs *d*, jointed levers W, and straps U, combined and arranged to operate substantially as set forth.

3. The improved roller-skate herein described, the same consisting of the sections B C, provided with the studs L, projections *m*, and slots *x*, the toe-piece N, provided with the slots R, notches *w*, and flanges *i*, the collets M, provided with the teeth *f* and flanges *r*, the studs D, provided with the toothed segments E and cross-heads K, the axles H, carrying the rollers J, the bars T, provided with the studs *d*, jointed levers W, and straps U, the heel-piece O, provided with the flanges *v* P and straps Q, and the bolt and nut *t*, constructed, combined, and arranged to operate substantially as described.

EDGAR HALL.

Witnesses:

C. A. SHAW,
W. H. HALL.

(No Model.)

H. J. MOORE.
ROLLER SKATE.

No. 306,029.

Patented Sept. 30, 1884.

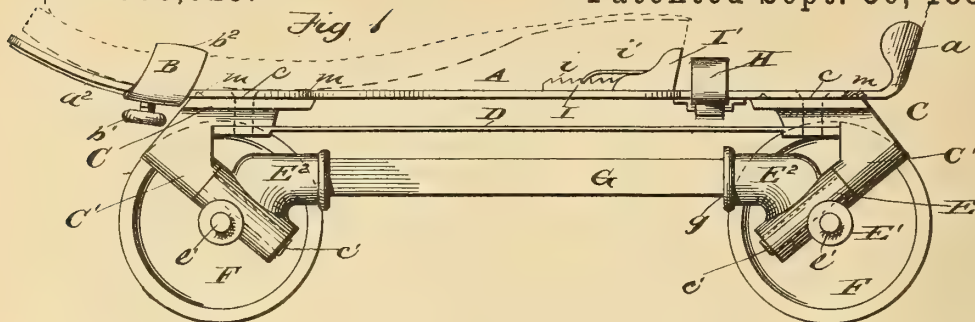


Fig. 2.

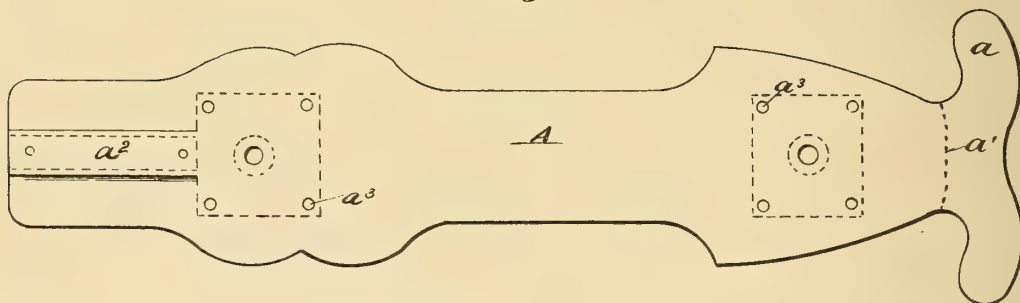


Fig. 3.

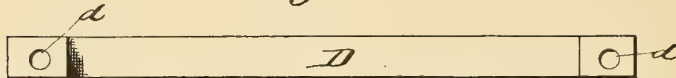


Fig. 4.

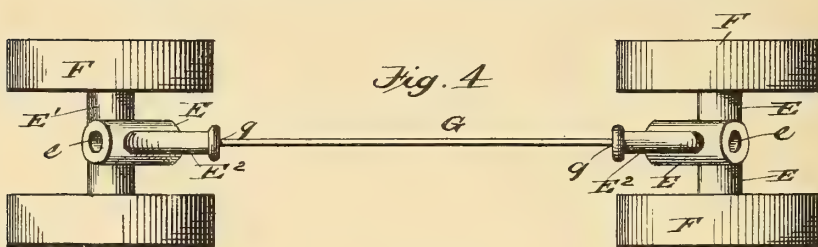


Fig. 5.

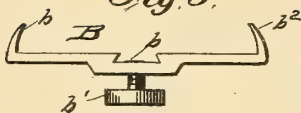


Fig. 6.

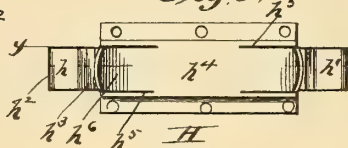
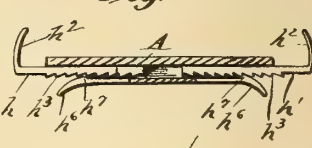


Fig. 7.



Attest:

W. H. N. Hughes

W. H. N. Hughes

Inventor:

Homer J. Moore

per Edison Bros.
Attorneys.

UNITED STATES PATENT OFFICE.

HOMER JOHN MOORE, OF FORT DODGE, IOWA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 306,029, dated September 30, 1884.

Application filed January 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, HOMER J. MOORE, a citizen of the United States, residing at Fort Dodge, in the county of Webster and State of Iowa, have invented certain new and useful Improvements in Roller-Skates; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to roller-skates; and it consists in certain new and useful improvements, hereinafter more fully described, and shown in the accompanying drawings, in which—

Figure 1 represents a side elevation of a roller-skate embodying my invention, with the wheels upon one side removed to show details of construction. Fig. 2 is a bottom plan view of the metallic top plate or foot-rest, the heel-clasp not having been bent upward. Fig. 3 is a plan view of the truss plate or bar. Fig. 4 represents the rollers or wheels, their supporting-castings, and the spring-bar that connects said castings. Fig. 5 is a detached edge view of the forward or toe clasp. Fig. 6 is a bottom plan view of the heel-clasp detached from the skate. Fig. 7 is a sectional view on the line *y y* of Fig. 6.

Similar letters of reference refer to like parts in the several figures.

In said drawings, A represents the top plate or foot-rest, preferably made of sheet-steel in the form shown in Fig. 2. *a* represents the heel-clasp, (shown in said Fig. 2 in flat position—*i. e.*, not turned up, as in Fig. 1,) the dotted lines *a'* in Fig. 2 indicating the point at which the heel-clasp *a* is bent in turning it upward. The forward end of the plate A is curved upwardly, as shown, upon the lower surface of which is riveted a narrow steel plate, *a''*, having dovetail side edges for the attachment of the toe-clamp B. The clamp B is provided upon its upper surface, at the middle thereof, with a dovetail groove, *b*, into and through which the dovetail strip *a''* passes.

b' represents the thumb-screw, which passes

through the clamp B, its end bearing against the lower surface of the dovetail strip *a''*, whereby the clamp is held from lateral movement and at any desired point upon the strip *a''*. The outer ends of the clamp are turned upward (see Fig. 5) to hold the forward end of the skate to the foot.

C C represent castings which are secured to the lower surface of the plate A, at the points indicated by the dotted lines in Fig. 2, by screws *c*, that pass through the plate A and castings C, and thence enter screw-threaded apertures *d* in a truss-bar, D, the ends of which extend below said castings, as shown in Fig. 1. The castings C are provided upon their upper surfaces, and at each corner thereof, with projecting spurs *m*, that enter corresponding recesses, *a'''*, in the lower surface of the plate A, thus preventing the castings from turning. The castings are also provided, upon their lower surfaces, with downwardly-projecting portions C', having rods or studs *c'* projecting therefrom, substantially as shown in Fig. 1. The rods *c'* pass through apertures *e* in the axle-castings E.

E represents the axle-castings provided with laterally-projecting portions E', through which the axle-rod *e'* passes. The rollers F are mounted upon the ends of the rod *e'*, and bear against the ends of the projections E'. The castings E are further provided, upon their upper sides, with projecting portions E'', having mortises therein, into which the ends *g* of a spring-plate, G, pass. One of the ends *g* of the plate G is rigidly secured, while the opposite end has slight lateral movement, to allow the spring to yield when the sides of the plate are depressed to secure a rocking motion.

H represents the heel-clamp, constructed as follows:

h *h'* represent strips of steel having their outer ends, *h''*, curved or bent upwardly to bear against the outer surface of the heel, while their lower surfaces have corrugations or teeth *h'''*, which extend from side to side of said plates, as shown.

h'' represents a box or socket secured to the lower surface of the foot-plate A. The bottom of said box is cut backwardly for a short distance at each end and side thereof, as shown at *h'''*, whereby spring-plates *h''''* are formed, the

upper surface of each of which is provided with a tooth, h' , that engages with the teeth h^3 of the strips h h' and holds said strip in position.

5 I represents a narrow strip of metal having dovetailed side edges, and upon its upper surface a series of teeth, i , and is secured to the upper surface of the foot-plate A, its office being to guide and hold a sliding block, I', in
10 position. Said block I' is provided upon its lower surface with a dovetailed groove, and is kept from backward movement by a spring-pawl, i' , that takes into the teeth i of the strip I. The block I' bears against the forward
15 edge of the heel and prevents the foot from sliding when the skate is in position.

The operation of my improved roller-skate will be understood without further description.

20 I am aware that various modifications in the details of construction herein shown and described as an embodiment of my invention can be made without departing from the principle or sacrificing the advantages thereof, and
25 I therefore hold myself at liberty to make such changes as fairly fall within the scope of my invention.

What I claim, and desire to secure by Letters Patent, is—

30 1. In a roller-skate, the combination of the foot board or plate, provided at its forward and rear ends, respectively, with castings having pivotal studs and connected by a truss-bar, with roller-axle bearings pivoted thereon and
35 connected together by a spring plate or bar, substantially as herein described.

2. In a roller-skate, the combination of the foot board or plate, provided at its ends with castings having pivotal studs projecting there-
40 from, with axle-bearings connected together by a spring-plate, said spring-plate being rigidly attached to one of said axle-bearings and loosely connected to the other, whereby the foot-board is permitted to rock upon said bear-
45 ings, substantially as described.

3. In a roller-skate, the combination of the foot board or plate with a heel-clamp, H, having spring-plates h h' , provided with upwardly-curved ends h^2 and corrugated surface h^3 , box h^4 having its bottom formed with spring-
50 plates h^6 , having teeth h' , substantially as herein described and set forth.

4. In a roller-skate, the combination of the foot board or plate A, having heel-clamp a and dovetail strip a^2 , with a toe-clamp, B, constructed as described, and having longitudinal
55 movement on the foot-plate, substantially as described.

5. In a roller-skate, the combination of the foot board or plate A, having heel-clamp a 60 and adjustable toe-clamp B and dovetail strip a^2 , with a dovetail-strip, I, secured to said foot-plate, and provided upon its upper surface with teeth i , sliding block I' upon the strip I, said block adapted to be held at any desired
65 position by a spring-pawl, i' , substantially as described.

6. In a roller-skate, the combination of the following elements, to wit: a foot board or plate, A, constructed as described, and provided with toe and heel clamps B, H, and I',
70 castings C, secured thereto and connected together by a brace-rod, D, axle-bearing castings E, constructed as described, and connected together by a spring-plate, G, all constructed and operating substantially in the manner
75 herein set forth.

7. The combination, with the foot board and plate C, having spurs m , of the casting C', and truss-bar D, which is lapped upon said
80 casting, and is secured thereto and to the plate C and foot-board A by a bolt or screw, e , as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HOMER JOHN MOORE.

Witnesses:

C. P. BERRIAN,
GUS. T. PETERSON,
P. W. THURMAN.

(No Model.)

J. A. DODGE.

ROLLER SKATE.

No. 306,066.

Patented Oct. 7, 1884.

Fig:1.

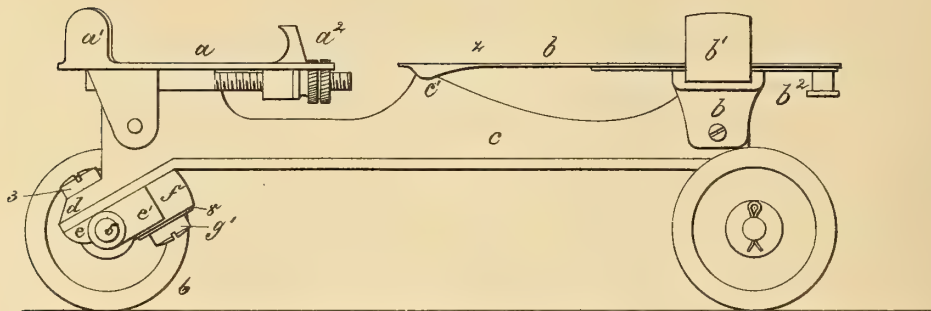


Fig:2.

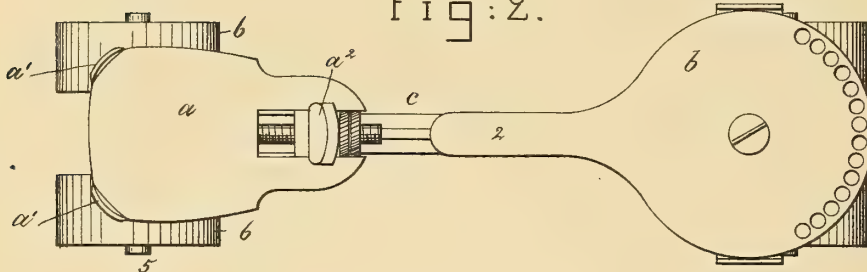


Fig:3.

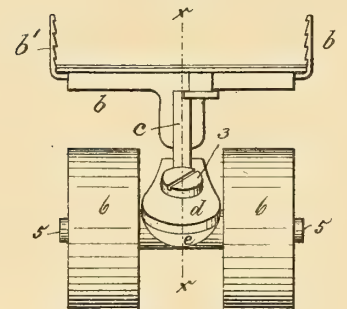


Fig:4.

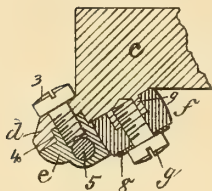
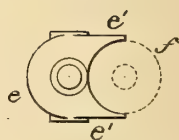


Fig:5.



Witnesses.

Arthur Lipperlen.

Henry Marsh

Inventor.

John A Dodge

by Crosby & Gregory, Attys.

UNITED STATES PATENT OFFICE.

JOHN A. DODGE, OF SOMERVILLE, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 306,066, dated October 7, 1884.

Application filed January 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. DODGE, of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to roller-skates having yielding bearings between the foot-plate or connecting-bar and the pivotal bearings for the rollers or their axles.

Heretofore rubber or other springs have been applied and arranged in connection with different parts of the skate to enable the bearings for the axles of the trucks or rolls to yield or oscillate to a limited extent while the skate is moving in a curved path, as is understood by skaters; but the rubber has been so applied that when worn and unfit for further use much difficulty has been experienced to again adapt the skate for use.

My invention has for its object the construction of a roller-skate in which a perfect yet simple and comparatively inexpensive yielding bearing is provided, wherein the parts composing the same may be so adjusted as to increase or decrease the extent to which the said bearings may yield or oscillate, and in which a new rubber or other spring may be easily substituted for a worn or unserviceable one.

To this end my invention consists, primarily, in the combination, with the foot-rest or connecting-bar of a skate provided with a tubular rubber removably and adjustably held thereto, of axle-bearings pivotally held to the said foot-rest or connecting-bar, and provided with a yoke or arms to embrace the said spring, substantially as hereinafter described, and particularly pointed out in the claims.

Figure 1 is a side elevation of a skate containing my invention, one of the rear wheels being removed to show the axle-bearing and other parts behind the said wheel; Fig. 2, a plan thereof with the said wheel applied; Fig. 3, an end elevation of the skate; Fig. 4, a partial vertical longitudinal section on line *x x*, Fig. 3, of part of the connecting-bar, the roller-axle, bearings for same, yoke, spring, and

connecting parts, and Fig. 5 is a plan of the yoke or axle support with the rubber tube shown in dotted lines.

The heel-plate *a*, provided with the ears *a'* and heel-clamp *a''*, pivotally attached to the frame or bar *c*, and the sole-plate *b*, secured to bar *c*, having the side clamps, *b'*, connected with a cam slotted disk, *b''*, and the lever 2, are all substantially the same in construction and operation as like parts shown and described in Letters Patent No. 286,792, granted to me October 16, 1883, to which reference may be had for a more detailed description thereof. In that patent the parts described are shown as applied to a skate-runner instead of to a metal bar, *c*, such as herein shown, and therein the end of the lever 2, having the downwardly-bent wings, engaged the toe or front end of the runner, while in the present instance, because of the different kind of skate employed, the end of the said lever is carried backward and engages the projection *c'*, arranged at about midway of the bar *c*, as clearly shown in Fig. 1. The connecting bar or frame *c* has at each end an outward and downwardly projecting flattened extension or broad circular ear, *d*, provided with an orifice, and with a collar-receiving recess of greater diameter, the former receiving the screw-bolt 3, and the latter the collar 4, formed on the axle-bearing *e*, and fitting into the said recess, said collar having a screw-threaded orifice, which receives the screw-bolt 3, thereby pivotally holding the axle-bearing *e* to the bar *c* in inclined position, as shown, the said axle-bearing having a flat surface or table, which meets the flattened ear of the bar *c*, thereby providing a broad, firm pivotal bearing. The axle-bearing *e* receives the axle 5, carrying the rollers 6, and has a yoke or wings, as at *e'*, formed therewith, and adapted to encircle for about half its circumference the india-rubber spring *f*, made as a cylindrical or tubular block, which is held in place with relation to the bar *c* by a screw or bolt, *g'*, all as clearly shown in Fig. 4. A washer, 8, may be interposed between the spring *f* and the head of the screw-bolt *g'*, and, if desired, a similar washer (not shown in the drawings) may encircle the col-

lar *g* so as to be interposed between the spring *f* and bar *c*, thereby preventing the rubber spring from bending or lapping over the edges of said bar when under pressure of the screw-bolt. The rubber spring *f* outside of the yoke *e'* may be inclosed by a metal plate extended half-way around the washer 8. Upon compression of the tubular rubber spring *f* by means of the screw-bolt *g'*, the face or periphery of said spring will bulge and press against the yoke *e'* of the axle-bearing *e*, thereby holding the parts in firmer relation, thus checking the tendency to rotatory movement of the pivoted axle-bearing. As soon as the rubber springs become worn or unserviceable they may be readily removed and new ones substituted therefor by removing the screw-bolts *g'* from the collars.

It is obvious that my improvement may be employed in a skate having a wooden or other foot-rest with suitable securing devices in lieu of the bar *c*, provided with the sole and heel plates and clamps, as shown.

I claim—

1. In a skate, the foot-rest or connecting-bar *c*, having ears *d* attached thereto or formed therewith, and provided with central orifices and collar-receiving recesses, and the

roller-carrying axles 5 and bearings therefor, having the plane surfaces and provided with screw-threaded collars 4, combined with the screw-bolts 3 to enter the said collars, substantially as set forth.

2. The connecting-bar *c* of a skate, provided with screw-threaded collars *g*, tubular india-rubber spring *f*, applied thereto, and spring-retaining screw *g'*, combined with a pivoted axle-bearing provided with a yoke, *e'*, adapted to embrace the periphery of the tubular spring *f*, substantially as described, and for the purposes set forth.

3. The rest or bar *c* and connected tubular and cylindrical spring *f*, and the axle-bearing pivoted upon the said bar and provided with a yoke or wings to embrace the said spring, combined with a screw and washer to hold the said spring in place, the screw being adapted to compress or relax the spring, as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN A. DODGE.

Witnesses:

B. J. NOYES,

W. H. SIGSTON.

(No Model.)

H. CARTER.

ROLLER SKATE.

No. 306,384.

Patented Oct. 14, 1884.

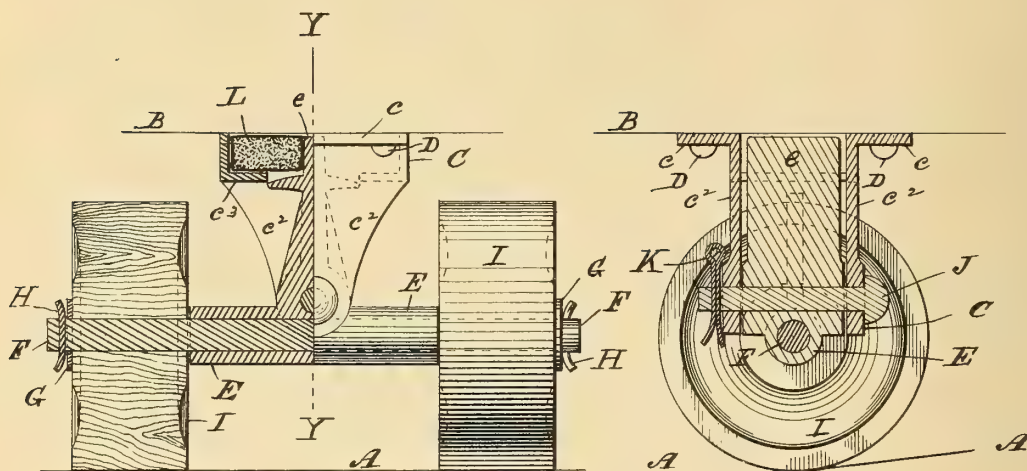


Fig: 1,

Fig: 2,

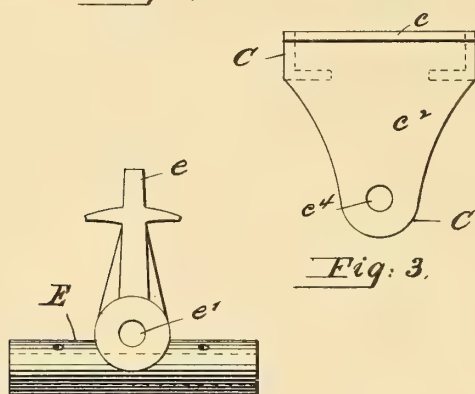


Fig: 3,

Fig: 4

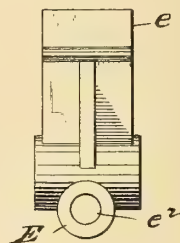


Fig: 5.

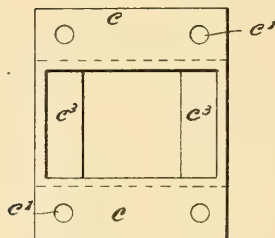


Fig: 6.

Witnesses,

F. A. Merrill
H. M. Davis

Inventor,

Henry Carter

per. J. B. Thurston
Attorney.

UNITED STATES PATENT OFFICE.

HENRY CARTER, OF CONCORD, NEW HAMPSHIRE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 306,384, dated October 14, 1884.

Application filed March 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY CARTER, a citizen of the United States, and a resident of Concord, in the county of Merrimac and State of New Hampshire, have invented a certain new and Improved Truck for Roller-Skates, of which the following is a specification.

My invention relates to that class of skates of which the foot-plate is permitted a limited amount of rocking both ways from an imaginary vertical line perpendicular with the floor, which enables a skater to determine and control his course, while bearing his weight upon one or upon both skates when either going forward or backward, by a simple movement of the ankle, thereby causing the sole of the shoe or boot to rest on an incline in either direction from said perpendicular line with the floor.

The nature of my improvements will be hereinafter clearly explained.

In the accompanying drawings, forming part of this specification, Figure 1 represents a front sectional elevation of my improved truck, having the rolls mounted upon their axle ready for use. Fig. 2 is a central vertical section at Y Y of Fig. 1. Fig. 3 is a detailed front view of the hanger, which is fastened by either screws or rivets to the sole-plate of a skate, and connected by a pivot to the axle-bearing. Fig. 4 represents a front view of the axle-bearing in detail. Fig. 5 is an end view of the same, Fig. 6 being a plan view of Fig. 3.

The line A in the drawings represents the floor, and B the sole-plate, which may be of any approved form and thickness, and to which the hanger C is secured by means of screws or rivets D, passed through the flanges *c* at *c'*, and thence into or through the said sole-plate. Said flanges *c* project from the front and back walls, *c''*, of the said hanger C, which are left open or without sides for three-quarters of the distance (more or less) from the bottom to the top thereof, the remainder being inclosed and provided with a shelf, *c''*, of suitable width, the purpose of which to be hereinafter described, and extending in each case from one to the other of the walls *c''*.

The axle-bearing E is made sufficiently long to separate the rollers I the proper distance,

and midway from either end thereof an arm, *e*, (the position of which is vertical and at right angles with said bearing,) is provided, having a hole, *e'*, bored through it crosswise of and as near as possible to the hole *e''* in said bearing, which carries the axle F, which is provided upon either end with the washers G and the pins H, for the purpose of holding the rollers I in position close to the ends of the bearing E.

To connect or disconnect the hanger C with the bearing E the rivet or pin J is provided, which passes through the hole *c'* in the lower part of either wall *c''* of said hanger, sustaining the said bearing E within the same by means of the hole *e'*. Said pin J is provided with a suitable head at one end, the other end having a hole, into which a split key or pin, K, is inserted. Rubber blocks L of the proper size are placed within the top part of the hanger C, resting upon the shelves *c''*, acting as springs upon the arm *e*, the top part of which passes up between said rubber blocks L, by means of which the hanger and the sole-plate of a skate will be held central, except at such time as a skater desires to direct the course of the skate on a curve, when, by tipping his foot, the desired result will be accomplished. Spiral springs may also be used in place of the rubber blocks L with perhaps equally as good results.

It may be well to mention here that the trucks (two of which are required for each skate) are placed upon the sole-plate slanting away from each other. In other words, the hangers, measured from center to center, when in position upon the sole-plate, would be nearer together by three-quarters of an inch (more or less) than would the axles taken from center to center, which accounts for the floor A, Fig. 2, being drawn on an incline.

Suitable oil-holes may be bored in the top part of the bearing E, as shown in Fig. 4, for the proper lubrication of the axle F.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

In a truck for roller-skates, the hanger C, constructed substantially in the manner described, having flanges *c*, perforated with

holes c' , and shelves c^3 , and pivoted by the pin
J and split pin K to the axle-bearing E, car-
rying the axle F and rolls I, and provided
with the arm or lever e , projecting upward
5 from the center of said axle-bearing within
said hanger, and the rubber springs L, placed
upon the shelves c^3 , within the hanger C, and
bearing upon either side of the lever e , so

constructed for the purpose of controlling and
limiting the tilting of the sole-plate of a skate, 10
as specified.

HENRY CARTER.

Witnesses:

NATHANIEL E. MARTIN,
J. B. THURSTON.

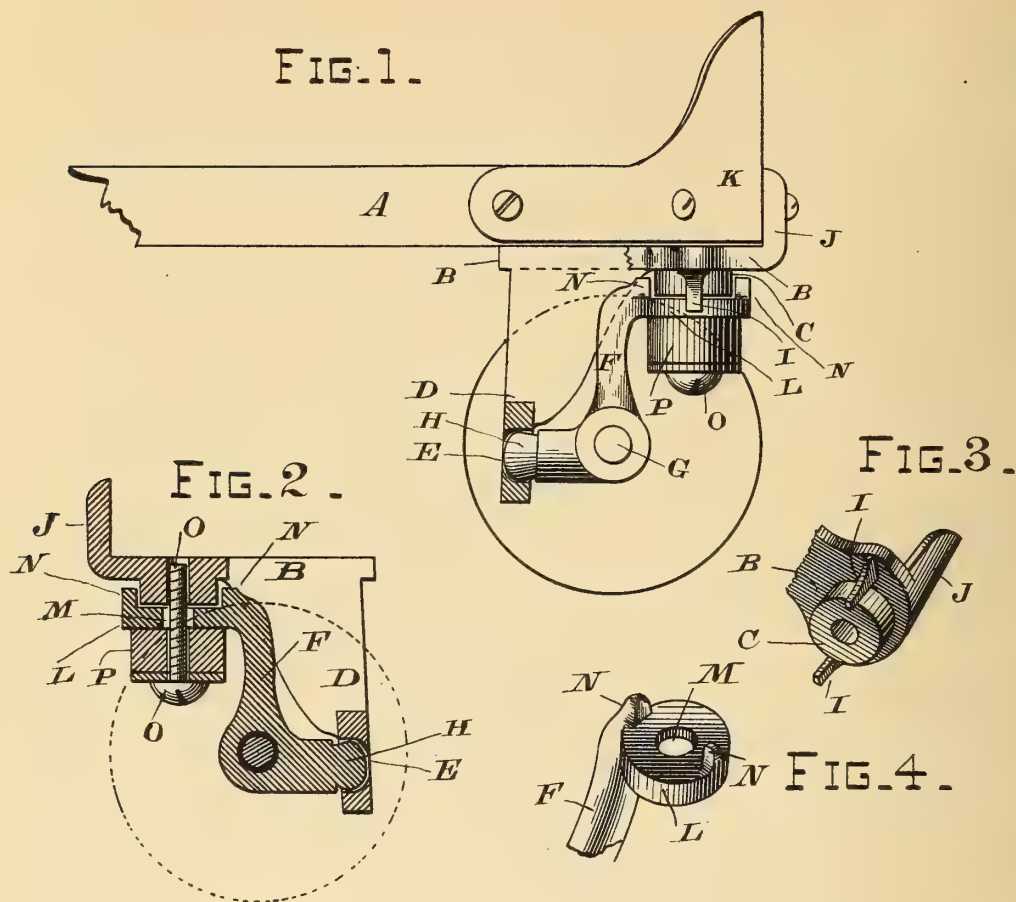
(No Model.)

W. B. HIGGINS.

ROLLER SKATE.

No. 306,397.

Patented Oct. 14, 1884.



WITNESSES.
Wilmer Bradford
Joseph Cooney

INVENTOR.
Walter B. Higgins
By E. W. Smith
Attorney.

UNITED STATES PATENT OFFICE.

WALTER B. HIGGINS, OF SAN FRANCISCO, CALIFORNIA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 306,397, dated October 14, 1884.

Application filed June 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALTER B. HIGGINS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Roller-Skates; and I hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable one skilled in the art to which my invention relates to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improvements in roller-skates, and more particularly to that class of roller-skates for which Letters Patent of the United States were granted to me on the 10th day of July, 1883, and numbered 280,821; and the object of my invention is to provide an improved form of construction for the hanger and foot-board plate, whereby the cost of manufacture is considerably reduced and the efficiency and durability of the skate are increased. These objects I accomplish by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, of the heel-roller of a skate having my improvement applied thereto. Fig. 2 is a central vertical longitudinal section of the same. Fig. 3 is a perspective view of the foot-board plate viewed from beneath. Fig. 4 is a perspective view of the top or bearing portion of the hanger viewed from above.

Similar letters of reference are used to indicate like parts throughout the several views.

A indicates the stock or foot-board, the front or toe portion being broken away, and this foot-board is provided with the customary straps and buckles for securing it in a proper manner upon the foot of the wearer.

B represents the sole-plate provided at one end with a stud, C, to be hereinafter more particularly described, and at the opposite end with a downwardly-extended post or standard, D, provided near its end with a hole, E.

The hanger or roller carrying frame F is made in the form shown in elevation in Fig. 1, having an axle, G, upon which the wheels or roller are secured, and provided at its lower forward end with a rounded knob or pintle, H, which fits into the hole E in the standard

D. It should here be remarked that the hole E is made somewhat cup-shaped, or of a smaller diameter at its forward than at its rear or entrance end, in order that the contracted portion may receive the thrust of the pintle or knob H. The stud C, which projects downwardly from the foot-plate, is made circular in plan, and is situated midway between two downwardly-projecting pins or lugs, I I, cast upon the said foot or sole plate. These lugs or studs are made somewhat longer than the vertical depth of the stud C, and are situated at some distance therefrom and upon the right and left hand thereof, as shown in perspective in Fig. 3 and in side elevation in Fig. 1. The sole-plate is also provided with an upwardly-extended lip or clip, J, at its rear end, which overlaps the rear end of the foot-board A and heel-plate K, and acts as a stay or brace, and thereby greatly increases the durability of the skate, as most of the strain or pressure brought to bear upon the skate, especially in the operation of "stopping," comes upon this part, and with the old construction the heel-plate is apt to be bent backward and becomes loosened. The upper end of the hanger is provided with a disk or plate, L, situated in a horizontal plane, and provided with a central aperture or screw-hole, M, and two upwardly-projecting studs, N N, situated at opposite sides, or at the front and rear of the said disk, as clearly shown in Fig. 4. The meeting-faces of the stud C and the disk L are made plane and are not countersunk, as shown in my previous patent, and they are held together by a screw, O, provided with a thick rubber washer, P. The screw passes through the disk L and enters and engages with the sole or base plate B, as shown in section in Fig. 2. When the parts are in position and the screw O is tightened up, it will be seen that the downwardly-extending studs or pins I I embrace or overlap the edge of the disk L, while the upwardly-extending lugs or pins N N overlap the central or bearing stud, C, of the sole or base plate, and that the upper and lower lugs or pins are at right angles to each other, and that the two sets of lugs or pins, by so overlapping the faces of the adjoining base-plate and hanger-disk, serve to retain the two parts in their true vertical position, assisted in a

measure by the screw O, and also that the rotation of the hanger is limited by the lower lugs or pins coming in contact with the upper ones; yet permitting of about one-quarter of a
5 revolution being made when turning curves during the operation of skating.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

10 1. In a roller-skate, the plate B, having a central bearing-stud, C, and side studs or pins, I I, in combination with the roller-carrying hanger F, having a horizontal plate or disk,

L, and studs or pins N N, the whole being connected and arranged to operate substan- 15
tially in the manner and for the purpose set forth and specified.

2. In a roller-skate, the plate B, having an upwardly - extending heel clip or brace, J, substantially as and for the purpose specified. 20

In testimony that I claim the foregoing I have hereunto set my hand and seal.

WALTER B. HIGGINS. [L. S.]

Witnesses:

WILMER BRADFORD,
CHAS. E. KELLY.

(No Model.)

G. W. KEYSER.

ROLLER SKATE.

No. 307,553.

Patented Nov. 4, 1884.

Fig. 1.

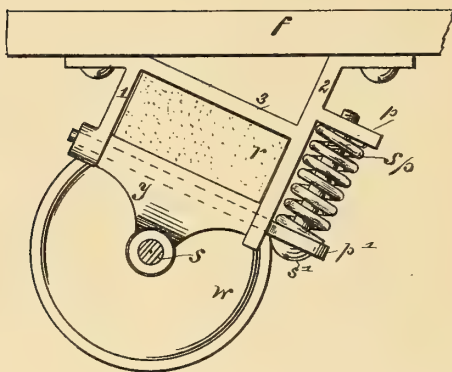
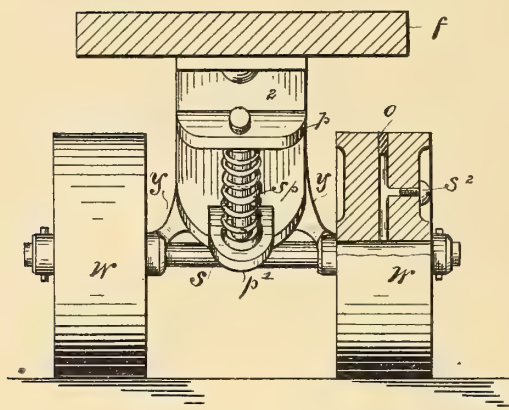


Fig. 2.



WITNESSES.

Jacob W. Loeper
Robt W. Shilling

INVENTOR.

Geo. W. Keyser.
By C. P. Jacobs
att'y.

UNITED STATES PATENT OFFICE.

GEORGE W. KEYSER, OF INDIANAPOLIS, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 307,553, dated November 4, 1884.

Application filed June 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. KEYSER, a resident of Indianapolis, Marion county, Indiana, have made certain new and useful
5 Improvements in Roller-Skates, a description of which is set forth in the following specification, reference being made to the accompanying drawings, in the several figures of which like letters indicate like parts.

10 My improvement relates to the construction of the wheel-frames of roller-skates, and is an improvement upon a former device invented by me and shown in my application for Letters Patent filed March 19, of the present year.
15 In the drawings, Figure 1 is a side view of my device, and Fig. 2 is an end view, a portion of one wheel being cut away to show the oil-channels for lubricating the axle.

In detail *f* is the foot-plate, to the under
20 side of which is attached the frame-work composed of parts 1, 2, and 3, all made in one piece, and adapted to surround the rubber spring-block *r*. The loose rocker-bar *p'* forms the under or fourth side of this frame-work, as
25 described in my former application. This rocker-bar has a bearing in the part 1 in front and moves in an open slot in the part 2 in the rear, and a set-screw, *s'*, passing through the head of this rocker-bar, loosely engages with a thread formed in an opening in a projection,
30 *p*, of the frame-work, so that by means of this set-screw a greater or less pressure may be brought to bear upon the rubber block by

means of the rocker-bar *p'*; but the elasticity of this rubber *r* is not enough, as a very great 35 strain is brought upon all parts of the caster in skating; hence I provide an additional spring of coiled wire, *sp*, which surrounds the adjusting-screw, and this spring is compressed by the tightening and lengthened by the loos- 40 ening of the set-screw *s'*. The adaptation of the parts to receive this spring and its attachment is a great improvement, as the parts are held more firmly and there is more elasticity under considerable pressure than where 45 but one spring (the rubber) is used. The caster thus made combines strength, elasticity, lightness, and beauty of finish, and is well adapted to undergo great strains in use.

What I claim, and desire to secure by Letters Patent, is the following, viz:

1. The combination, in a caster for roller-skates, of the frame-work 1 2 3, the rubber core *r*, inclosed therein, the adjustable rocker-bar *p'*, set-screw *s'*, coiled spring *sp*, the 55 yoke *y*, foot-plate *f*, wheels *w*, and axle *s*, substantially as described.

2. The frame-work 1 2 3, adjustable rocker-bar *p'*, rubber *r*, set-screw *s'*, spring *sp*, and the axle and wheels of a skate, substantially 60 as described.

Witness my hand May 26, 1884.

GEO. W. KEYSER.

Witnesses:

C. P. JACOBS,

BENJ. C. WRIGHT.

307.67

(No Model.)

C. W. GOOCH.

ROLLER SKATE.

No. 307,643.

Patented Nov. 4, 1884.

Fig. 1

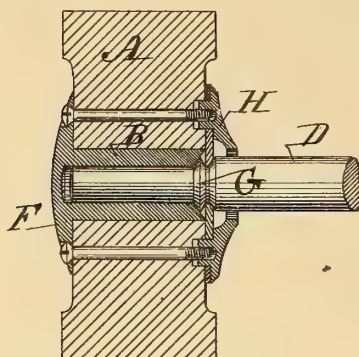


Fig. 2

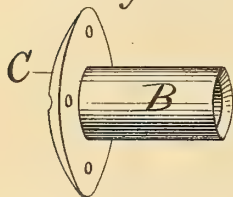


Fig. 4

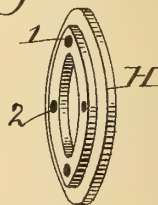


Fig. 3

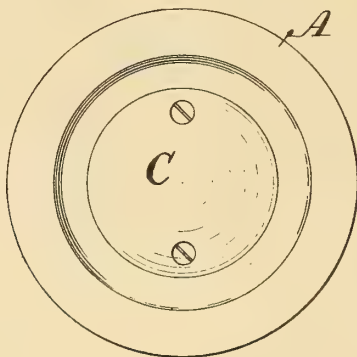


Fig. 5

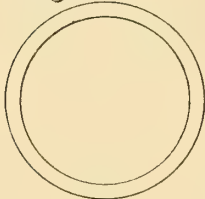
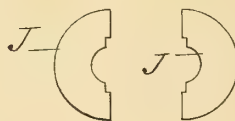


Fig. 6



Witnesses:

Orra L. Moore.

W. A. Anderson.

Inventor:

Charles W. Gooch;

By Thomas G. Orwig, Att'y.

UNITED STATES PATENT OFFICE.

CHARLES W. GOOCH, OF BOONESBOROUGH, IOWA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 307,643, dated November 4, 1884.

Application filed April 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. GOOCH, of Boonesborough, in the county of Boone and State of Iowa, have invented an Improved Roller-Skate, of which the following is a specification.

My improvement relates to the manner of attaching the rollers to the axles, and my object is to prevent the damaging of garments and avoid the dangers and accidents incident to the use of roller-skates that have their journals projecting through the rollers, and secured by means of fastening devices attached to the ends of the journals. In all cases where a journal projects entirely through a roller oil will escape and accumulate on the outside face of the roller and rub off upon garments that come in contact therewith, and pins, keys, split rings, and other extraneous fastening devices that are fixed to the journal outside of the roller to retain it are liable to catch garments and to cause accidents.

Heretofore a roller has been provided with a bushing or journal-box that had a flange at its inner open end, and a journal retained from longitudinal movement therein by means of a collar and semicircular washer-plates.

My improvement consists in forming a flange integral with the outside and closed end of a journal-box and oil-cup, and combining it with a roller and an axle having a journal and an annular bead at the inner end of the journal, and a disk having a circular recess and an annular projection or ring formed integral therewith by means of two semicircular washer-plates and two or more screw-bolts, as hereinafter fully set forth.

Figure 1 of my accompanying drawings shows a half-section of a roller combined with a journal and section of an axle. Fig. 2 is a perspective view of my journal-cap and oil-cup. Fig. 3 is an end view or outside face of a roller. Fig. 4 is a perspective view of a disk having a recess on its inside face. Fig. 5 represents a rubber ring or gasket, and Fig. 6 my semicircular washer-plate.

Jointly considered, these figures clearly illustrate the construction, operation, and utility of my complete invention.

A represents a roller that is preferably made of hard wood, and that may vary in size, as desired. It has a transverse bore through its center for the reception of a journal-box.

B is a journal-box and oil-cup. It has a flange, C, at its closed end that has a flat inside face and a convex outside face.

D is an axle that is designed to be fixed to the frame of a skate, and that has journals F on its ends and annular beads G at the inner ends of the journals.

H is a disk that has a recess on its inner face and an annular shoulder around the recess for the reception of the semicircular washers J, and also screw-threaded bores 1 2 3 for the reception of screw-bolts.

To fasten all the parts together I first insert the box and oil-cup in the roller, place the washers J in the recess in the inside face of the disk H, and slip the disk over the journal and allow the inner edges of the washers to enter the annular groove that exists between the bead and the shoulder at the end of the axle, as clearly shown in Fig. 1. By then inserting the free end of the journal into the box and oil-cup and passing screw-bolts through the flange C, and through the roller into the disk H, all the parts can be firmly united, and an elastic gasket or packing clamped between the disk and inner face of the roller. Openings in the contiguous edges of the semicircular washers and a space between the disk and the axle allow oil to be introduced into the journal-box and oil-cup from the inner face of the roller to enter a cavity at the extreme end of the journal, and the flange and closed bottom of the cup prevent the oil from getting upon the outside face of the roller.

I claim as my invention—

The journal-box and oil-cup B, having a fixed flange, C, at its closed end, the axle D, having a journal, F, and an annular bead, G, a disk, H, having a circular recess in the center of its inside face, and an annular and perforated projection around the circular recess, two semicircular washer-plates, and two or more screw-bolts, in combination with a roller in a roller-skate, substantially as shown and described, for the purposes stated.

CHARLES W. GOOCH.

Witnesses:

THOMAS G. ORWIG,
J. A. MARTIN.

(No Model.)

E. J. WORCESTER.

ROLLER SKATE.

No. 307,826.

Patented Nov. 11, 1884.

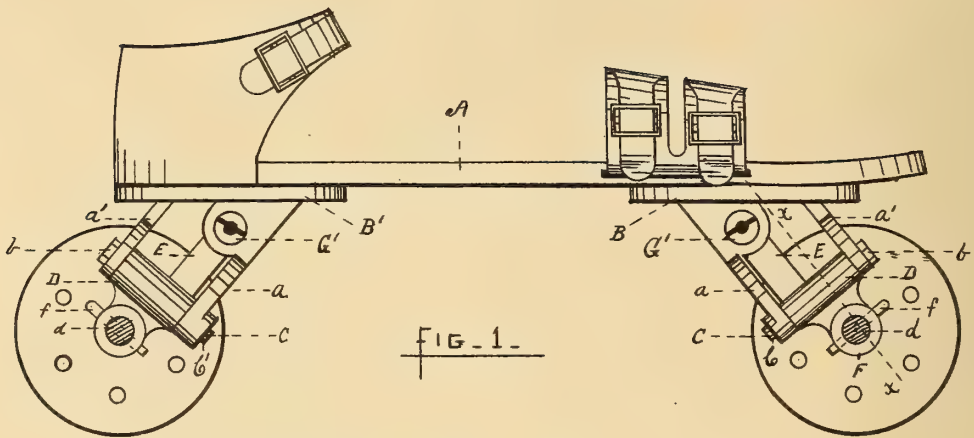


FIG. 1.

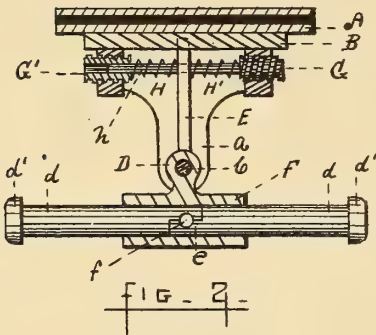


FIG. 2.

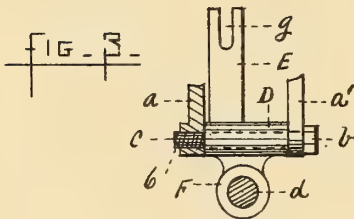


FIG. 3.

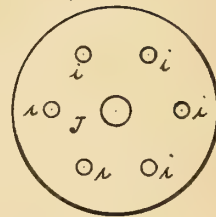


FIG. 4.

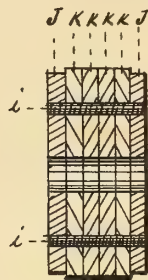


FIG. 5.



FIG. 6.

Witnesses

Rufus B. Fowler,
H. M. Fowler

Inventor

Edward J. Worcester

UNITED STATES PATENT OFFICE.

EDWARD J. WORCESTER, OF WORCESTER, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 307,826, dated November 11, 1884.

Application filed January 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. WORCESTER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification, with accompanying drawings illustrating my invention, and in which—

10 Figure 1 shows a side view of a skate with the nearest rolls removed. Fig. 2 is a sectional view of the roll-supporting frame on line *x x*, Fig. 1. Fig. 3 is a detached view of the roll-bearing and lever *E*. Figs. 4 and 5 show different views of the roll, and Fig. 6 is a sectional
15 view of the same.

Like letters refer to like parts in the several views.

My invention consists in the construction
20 and arrangement of the several parts, whereby the foot-rest may be rocked or inclined laterally and the direction of the skate changed, as hereinafter set forth; also, in the mode of attaching the rolls to the skate; and, further,
25 in the construction of the rolls themselves.

A is the top or foot-rest, and B B' plates secured to the under side of the foot-rest, having the depending roll-supporting frame consisting of the lugs *a a'*, holding the pin C, which
30 has a head, *b*, and a screw-thread, *c*, entering the lug *a'*. Upon the pin C the sleeve D turns, having on the lower side, and at right angles thereto, the socket F, and on the upper side the lever E, both rigidly attached to the sleeve
35 E. The socket F receives the inner ends of the steel pins *d d*, which form the bearings for the rolls, the heads *d' d'* preventing the rolls from coming off. The inner ends of the pins *d d* are halved and overlap at *e*, and are both
40 firmly held in the socket by means of the tapered pin *f*, which passes through the line of contact of the halved ends of the pins *d d*; or, instead of the overlapping ends, the pins *d d* may be made to abut each other, and a pin
45 passed through each of the pins *d d*. The lever E has a slot, *g*, at the end embracing the rod *h*, which is attached to the screw G, and entering a hole in the center of the screw G'. The screws G and G' are held in the frame, or
50 in lugs projecting from the plates B B', and are arranged in the same axial line, and

capable of longitudinal movement to or from each other. Upon the rod *h* are two spiral springs, H H', acting against the end of the lever E and the screws G G', by means of which
55 the tension of each spring may be adjusted independently of the other. The two roll-bearings held by the plates B B' are pivoted on the pins C C', each placed at oppositely-inclined angles to the foot-rest A, so that the
60 rocking of the foot-rest on the pivots C C' will cause the axes of the rolls to vary their angle with the line of motion of the skate, making the rolls on one side to approach each other, and causing the skate to move on a curved
65 line. This peculiarity of construction, however, I do not claim as new, for it has long been in use. As the foot-rest is inclined to one side the spiral spring on that side will be compressed and its tension will return the foot-
70 rest to a level position when the force inclining it is removed.

I form the rolls by uniting several disks of rawhide and leather together, as follows: Placing a disk of rawhide on each side of the roll,
75 as shown at J J in Figs. 5 and 6, and forming the central section of the roll of one or more disks of leather, according to the thickness desired, as at K K, the disks are then firmly
80 pressed together, either with or without glue or other adhesive material between them, and the screw-threaded rods *i i* are inserted entirely through the several layers of rawhide and leather.

I am aware that rolls have been heretofore
85 made of rawhide, also that rolls have been made in which rubber or some elastic material has been compressed between outer and inclosing washers; but my mode of construction varies from any of these methods, whereby
90 I secure several advantages not possessed by them.

The peculiar texture of leather has been recognized as furnishing a very desirable outer
95 surface of skate-roll, it being sufficiently hard to withstand the pressure of the skater's weight, and its elasticity and fibrous character affording a slight friction or clinging to
100 the surface of the floor, especially when used in the form of disks; but when the entire roll is so formed the abrasion soon wears away the corners, as the fibers of the leather are not

sufficiently cohesive and firm, and when metallic inclosing washers or disks are used their sharp and unyielding edges cut off the fibers of the leather. I secure the advantages of the leather roll by using outer washers of rawhide or some similar semi-elastic substance, the central disks of leather being slightly larger than the disks of rawhide, and the face of the roll may be slightly crowned, as shown in Figs. 5 and 6. The porous nature of the inner layers of leather surrounding the spindles *d d* also absorb the oil, plumbago, or other material used as a lubricant.

I do not claim, broadly, the use of a lever, *E*, attached to the joint; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the roll-bearings of a roller-skate pivoted on a pin, *C*, held in lugs *a a'*, depending from the foot-rest, of the lever *E*, springs *H* and *H'*, resting against the ends of the screws *G G'*, and adjusting-screws *G G'*, all arranged substantially as set forth, and for the purpose specified.

2. The combination, with the roll-bearings of a roller-skate pivoted to the foot-rest, and having a lever and actuating-springs, substantially as described, of adjusting-screws and spring-supporting rod attached to one of said screws and entering a central hole in the other adjusting-screw, as and for the purpose set forth.

3. The combination, with the foot-rest of a roller-skate, of roll-bearing spindles, with their inner ends entering sockets suitably attached to the foot-rest, having said inner ends halved and overlapping, with a retaining-pin passing transversely through the inclosing-socket, and also through the line of contact of the overlapping spindles, as and for the purpose set forth.

4. The within-described roll for roller-skates, consisting of a central section composed of one or more disks of leather, inclosed by two outer disks of rawhide or similar semi-elastic material, said inclosing-disks being slightly smaller than the disks forming the central section, the several disks being suitably joined together, as and for the purpose set forth.

5. The roll for roller-skates, consisting of a central section composed of one or more disks of leather having two outer and inclosing disks of rawhide or similar semi-elastic material, with the screw-threaded rods *i i*, extending through the several disks and firmly joining the same together, as and for the purpose set forth.

EDWARD J. WORCESTER.

Witnesses:

RUFUS BENNETT FOWLER,
GEO. E. SMITH.

(No Model.)

G. D. BURTON.

ROLLER SKATE.

No. 307,840.

Patented Nov. 11, 1884.

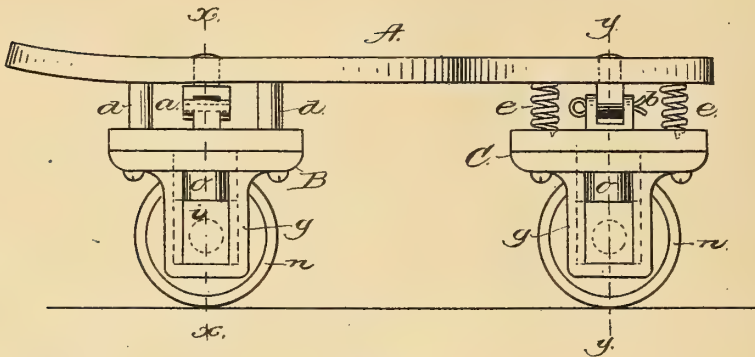


Fig. 1.

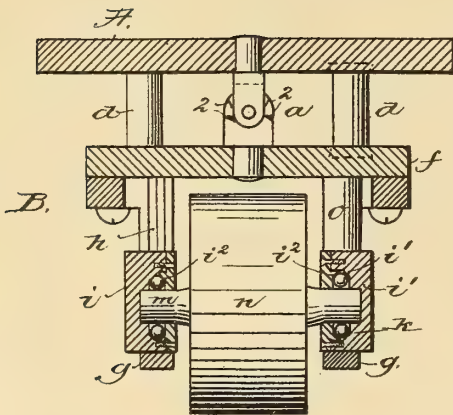


Fig. 2.

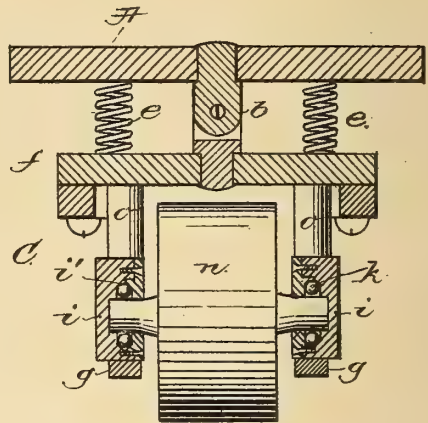


Fig. 3.

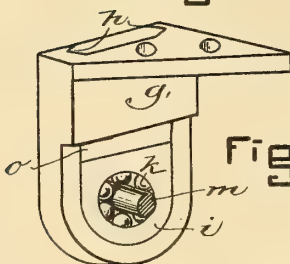


Fig. 5.

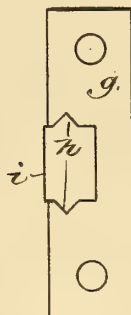


Fig. 4.

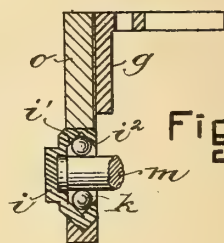


Fig. 6.

WITNESSES

E. F. Perkins
John F. C. Prinkert

INVENTOR

G. D. Burton

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF NEW IPSWICH, NEW HAMPSHIRE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 307,840, dated November 11, 1884.

Application filed August 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, of New Ipswich, county of Hillsborough, State of New Hampshire, have invented an

Improvement in Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention, relating to roller-skates, is embodied in a skate the foot-board of which is pivotally connected with trucks at the forward and rear ends, springs being interposed between the said trucks and foot-board at either side of the pivot, thus giving a yielding rocking movement to the foot-board upon the trucks. Each truck consists of a platform having pedestals at either side, provided with guides in which the bearing-boxes for the ends of the axles may slide vertically. The said bearing-boxes have conical surfaces to receive a series of anti-friction balls surrounding the roller-axle.

Figure 1 is a side elevation of a skate embodying this invention; Figs. 2 and 3, transverse vertical sections on lines *xx* and *yy*, Fig. 1; Fig. 4, a plan view of one of the pedestals for the roller-bearings; Fig. 5, a perspective view of a somewhat different form of pedestal, and Fig. 6 a vertical section thereof.

The foot-board *A*, of any suitable or usual construction, is connected by hinges or pivots *a b* with pedestals *B C*, near the ends of the said foot-board, the said hinges *a b* being so constructed as to permit the foot-board to rock laterally with relation to the said trucks, which have no lateral or rocking movement with relation to the floor. The hinge *a* is shown as having a stop or shoulder, 2, to limit the rocking movement of the foot-board.

Springs *d e* are interposed between the under side of the foot-board and the platform *f*, forming the upper portion of the trucks *B C*, to afford an elastic or yielding resistance to the lateral or rocking movement of the said foot-board, the springs *d* being shown as composed of rubber, while the springs *e* are metallic helical openings.

The platforms *f* have rigidly connected with them at either side pedestals *g*, provided with guides *h*, (shown in this instance V-shaped,) to receive the bearing-boxes *i*, (shown in Figs. 2 and 3 as made in two parts,) each having a conical bearing-surface, *i' i''*, for a series of anti-friction balls, *k*, surrounding the axles

m of the rollers *n*, one of which is shown in this instance as used in each truck.

The boxes *i* are preferably free to slide vertically in the guides *h*, and are provided with springs or cushions *o*, (shown as composed of rubber,) interposed between the said bearing-boxes and the platform *f*, and serving to prevent the jar or vibration arising from an uneven floor from being felt by the wearer of the skate.

As shown in Figs. 5 and 6, the boxes *i* are made each of a single piece, and the conical surfaces *i' i''* may be finished by a suitable cutting-tool. In this construction the balls are dropped into the box before the axle *m* is inserted, and the latter, when in place, prevents the balls from escaping from their conical or V-shaped channel. The pedestal *g* shown in Figs. 5 and 6 is somewhat different in shape from those shown in the other figures, but the construction and operation are essentially the same.

If desired, the springs or cushions *o* may be omitted and the bearing-boxes *i* supported directly against the platform *f* or a rigid block or stop in the pedestal above the said boxes.

I claim—

1. The combination of the foot-board with trucks hinged thereto, each composed of a platform, pedestals rigidly fixed to the said platform, bearing-boxes therein, springs or cushions interposed between the said platform and bearing-boxes, and a roller having its axle journaled in the said boxes, and the springs interposed between the said platform and foot-board at either side of the hinge, substantially as described.

2. The trucks, each composed of a platform, pedestals rigidly fixed thereon and provided with vertical guides, bearing-boxes in the said guides provided with co-operating conical bearing-surfaces, anti-friction balls in the said boxes, and a roller having its axle bearing on the said balls, in combination with a foot-board hinged on the said platforms, and springs interposed between the said platform and foot-board at either side of the hinge, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE D. BURTON.

Witnesses:

JOS. P. LIVERMORE,
W. H. SIGSTON.

(No Model.)

C. H. WHITE.
ROLLER SKATE.

No. 308,025.

Patented Nov. 11, 1884.

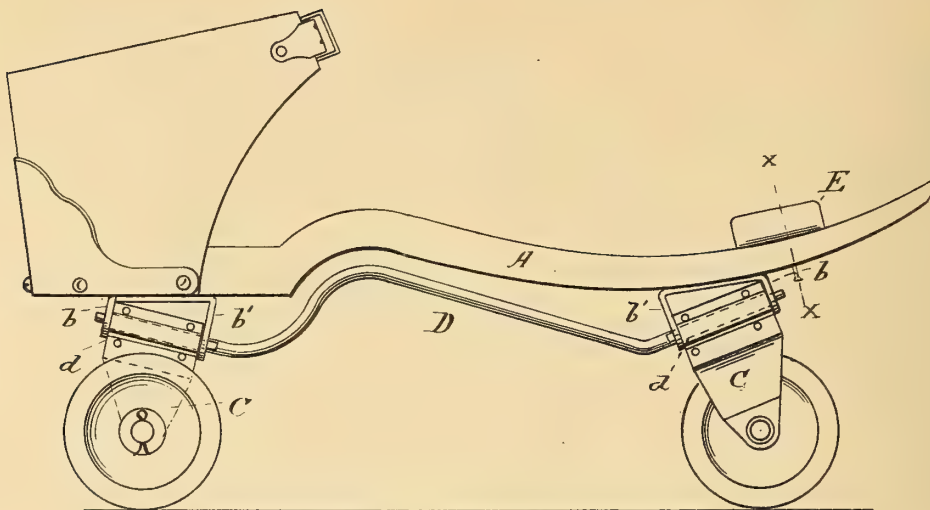


Fig. 1.

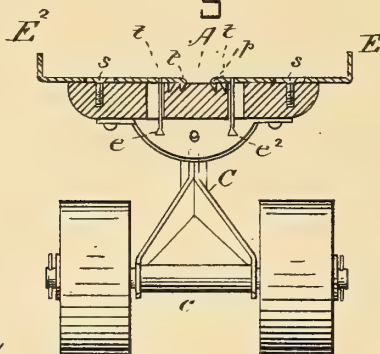


Fig. 2.

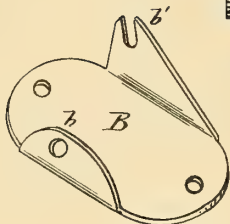


Fig. 3.

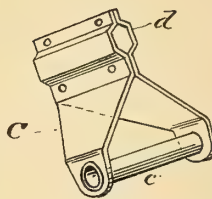


Fig. 4.

WITNESSES

Frank G. Parker
Wm. T. Gilbert

INVENTOR

Chas. H. White
by W. B. A. Dows
att'y.

UNITED STATES PATENT OFFICE.

CHARLES H. WHITE, OF MALDEN, ASSIGNOR OF ONE-HALF TO JAMES D. THORNDIKE, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 308,025, dated November 11, 1884.

Application filed May 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WHITE, of Malden, in the county of Middlesex and Commonwealth of Massachusetts, have invented new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to that class known as "roller-skates," and has for its object extreme simplicity of construction, combined with strength and great durability.

My invention consists, in general, in the means I use whereby I am enabled to obtain both a vertical and lateral elasticity for the foot-support, and particularly in the improved form and material in which the roller-frame and truck-frame are made, and, further, in the spring and improved clamp. The roller-frames are so connected to the hanger-frames that they are easily detachable.

Hitherto in roller-skates the elasticity of the foot-support has been best obtained by means of an elastic cushion or its equivalent, generally placed between a foot-standard, or a pressure-plate therein, and the upper surface of a truck-frame.

My invention enables me to entirely do away with any elastic cushion or other mechanism, and yet attain all the elasticity necessary for the performer to describe all the various evolutions desired while accomplishing dextrous and complicated movements.

In the accompanying drawings, Figure 1 is an elevation, with one of the front wheels removed, of my improved roller-skate. Fig. 2 is a detail sectional view of the same on line *xx*. Fig. 3 is a perspective view of the hanger-frame or bearings. Fig. 4 is a perspective view of the truck-frame or roller-frame.

Similar letters of reference indicate corresponding parts.

The foot support or standard is designated by the letter A, to which may be attached heel and toe straps or clamps, as desired. The foot-support may be composed of any suitable material. I preferably, however, make it of struck-up sheet-steel.

B is a hanger-frame, firmly secured by screws to the foot-standard, and provided with bearings or coupling-ears *b b'* for the spring D.

C is a truck or roller frame, provided with a bearing, *c*, for the roller-axle, and socket *d* for the spring-rod D.

Both the hanger and roller frame I preferably make of struck-up steel. I make the hanger-frame and roller-frame the same for both the toe and heel of the foot-standard. These parts are thus interchangeable.

The spring D, I preferably make of steel of the sectional shape to fit the socket *d* of the truck-frame, and of the general form shown; but I do not limit myself to this shape or form, as this rod or torsion-spring could be round and nearly straight, in which case, however, it would not be so effectual in its action.

My improved clamp is composed of the two sections E E'. Each section is firmly secured by a screw, *s*, to the foot-standard. This screw passes through an oblong slot in its section and allows the clamp to be moved in the line of the slot to and away from the center of the standard. A point or catch, *p*, on the end of the sections E E' is arranged to connect with sockets *t*, and hold firmly the sections of the clamp after the foot is inserted and the sections are pushed together. The pins *e e'* are an integral part of the sections E E', and move with the sections in the slots in the foot-standard, as shown. They serve to raise the point *p* out of the socket, where it is held by the spring action of the socket, and allow the clamp to be opened. This clamp so made, as shown and described, has no rough surface to abrade the foot-covering, and while being very simple in operation is yet very effective in service.

In the construction a hanger-frame, B, is first secured to the toe and heel of the standard, and both ends of the spring D, having been inserted through the socket *d* of a roller-frame, are sprung into position in the bearings of the hanger-frame, as shown in Fig. 1.

The peculiar construction and material of the hanger-frame and roller-frame, and the manner of their combination with the spring D, all unite to give a vertical elasticity. The spring D causes both the foot-standard and the roller-frames always quickly to assume a horizontal position when either has received a lat-

eral motion by the movements of the performer. Any lateral movement of the standard or roller-frame operates to twist the spring D, the automatic resistance of which causes it to resume its normal position and produce the desired result.

My improved skate is shown with four rollers; but I do not limit myself to any particular number.

I am aware that I am not the first to use a torsional spring in a parlor-skate; and I do not broadly claim this as my invention. It has been used for the purpose of keeping coupling-bars in roller-skates on a line with each other and the central line of the skate. I know, however, of no roller-skate which has a torsional spring combined, as described, with a hanger-frame and roller-frame.

I believe I am the first to so use a torsional spring, whereby I obtain both a vertical and lateral elasticity from the foot-standard.

What I claim as my invention is—

1. In a roller-skate, the combination of the torsional spring D with the roller-frame C and

hanger-frame B, substantially as described, and for the purpose set forth.

2. In a roller-skate, a hanger-frame consisting of the plate B, provided with the pierced ear *b* and slotted ear *b'*, to receive the spring D, substantially as described.

3. In a roller-skate, a roller-frame, C, provided with the socket *d* for the spring D, and bearing *c* for the roller-axle, substantially as described.

4. In a skate, a foot-clamp consisting of the sections E E², each section having as an integral part of it a point or catch, *p*, and a pin, *e*, in combination with a foot-standard of a skate having slots, as shown, and sockets *t*, to receive the points *p*, all constructed and operated substantially as described.

In witness whereof I have hereunto set my hand.

CHARLES H. WHITE.

Witnesses:

WM. B. H. DOWSE,
WM. T. GILBERT.

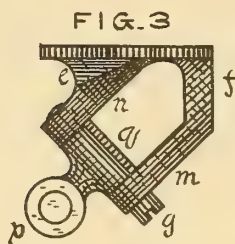
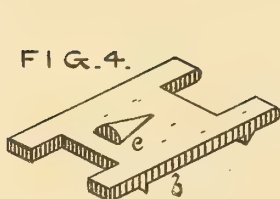
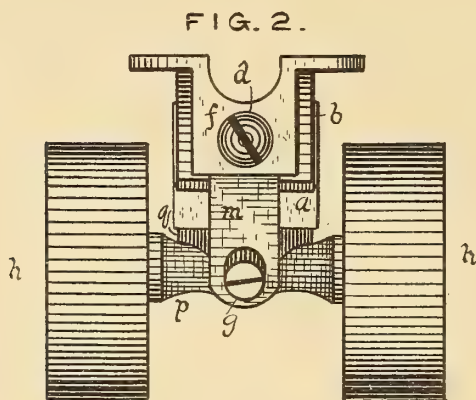
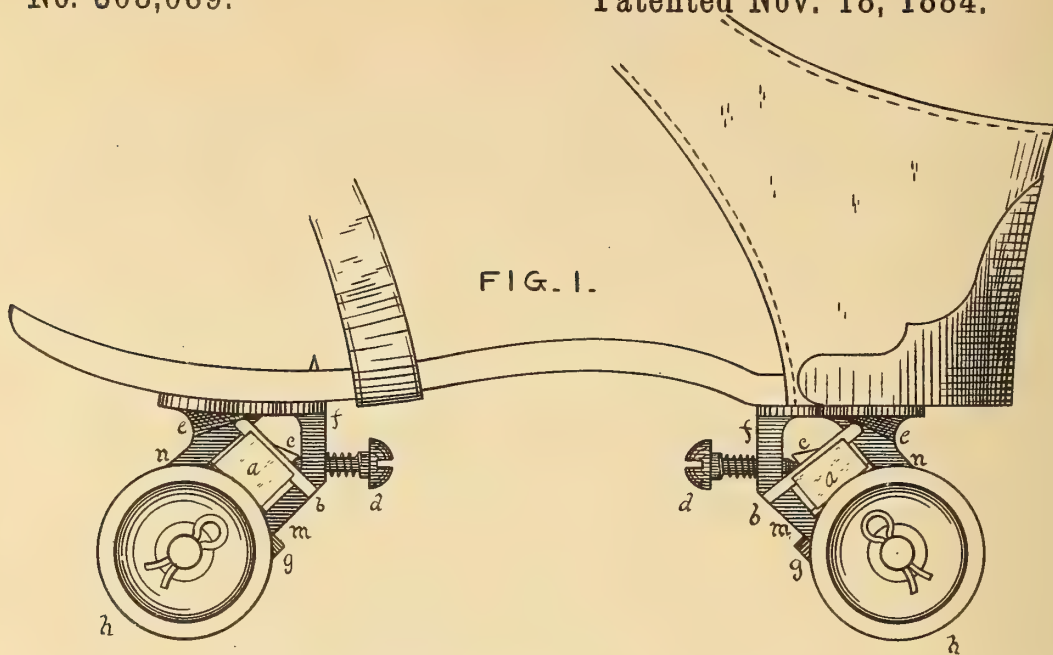
(No Model.)

F. B. MUELLER.

ROLLER SKATE.

No. 308,089.

Patented Nov. 18, 1884.



Witnesses.
O. B. Sparks
C. H. Walters

Inventor.

FRED B. MUELLER.

By L. P. Graham
att'y.

UNITED STATES PATENT OFFICE.

FRED B. MUELLER, OF DECATUR, ILLINOIS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 308,089, dated November 18, 1884.

Application filed March 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRED B. MUELLER, a resident of the city of Decatur, county of Macon, and State of Illinois, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of my complete skate. Fig. 2 is a rear elevation of the front truck. Fig. 3 is a side elevation of a truck-frame, and Fig. 4 is a perspective view of the plate used to compress the spring.

a is the spring, made preferably of rubber or some corresponding elastic substance.

b is the plate used to compress the spring *a*.

c is a projection on plate *b*, against which the adjusting-screw exerts its force.

d is the adjusting-screw, located as indicated in frame *f*.

e shows inclined surfaces against which the ends of plates *b* operate.

As shown in Fig. 3, the truck-frame is composed of parts *f*, *m*, and *n*, in which axle *p* is pivoted by means of screw or bolt *g*. The upper portion of the axle-pivot expands into platform *q*, on which spring *a* rests.

h h are the wheels, loosely mounted on axles *p*.

By first placing plate *b* in position, following with the spring, and securing the whole by inserting screw *g* through pivot *q*, the truck may be readily put together.

To adjust the pressure of the spring, screw *d* is driven or drawn, as the case requires.

The effect of the pressure of screw *d* on plate *b* is as follows: The force of the screw is exerted through the plate against the inclines *e*. As the pressure is increased the force compels the ends of the plate to ascend the inclines and the entire plate to approach the platform *q* in a position parallel thereto.

By the use of the above-described arrangement pressure is imparted uniformly to all parts of the spring, which is thereby correspondingly strengthened.

I claim as new and desire to secure by Letters Patent—

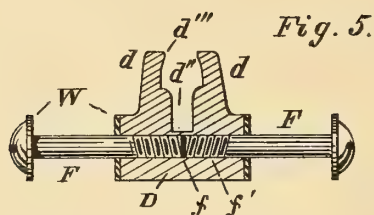
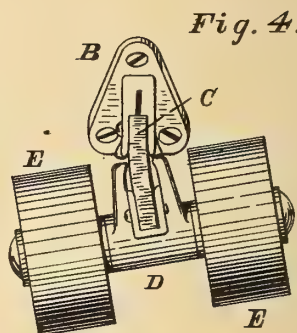
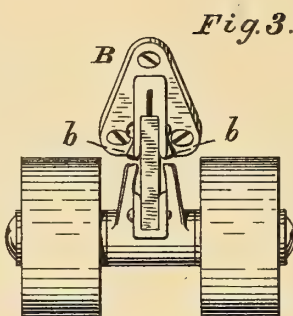
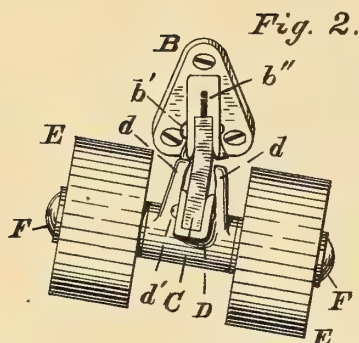
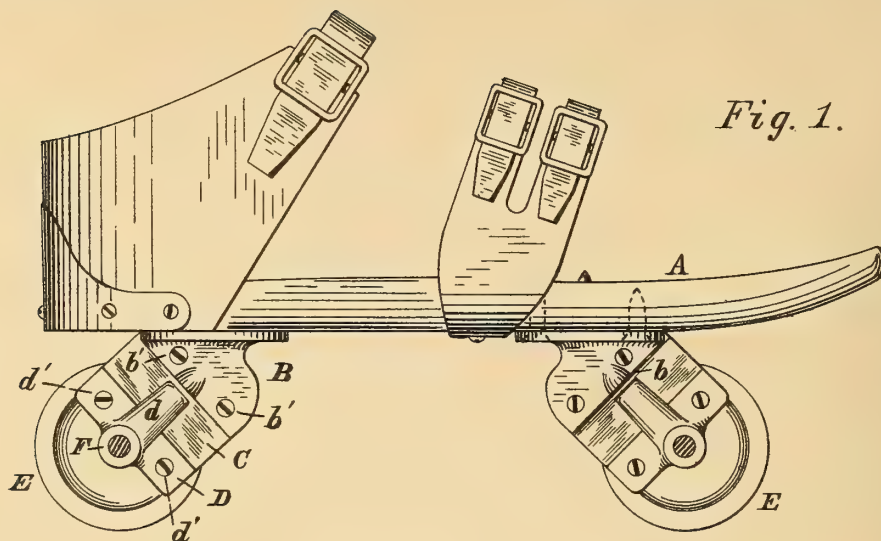
The combination of plate *b*, projection *c*, screw *d*, and inclined planes *e*, as and for the purpose set forth.

FRED B. MUELLER.

Attest:

L. P. GRAHAM,
I. D. WALKER.

Patented Nov. 25, 1884.



WITNESSES;
William D. Fanning.
John E. Day

INVENTOR.
Oliver Arnold

UNITED STATES PATENT OFFICE.

OLIVER ARNOLD, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-
FOURTH TO WILLIAM B. FANNING, OF SAME PLACE.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 308,547, dated November 25, 1884.

Application filed April 30, 1884. (No model.)

To all whom it may concern:

Be it known that I, OLIVER ARNOLD, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Roller-Skate, of which the following is a specification.

My invention relates to improvements in roller-skates in which two diagonally-slotted hangers or controllers are firmly attached to the under side of the foot-rest, the slots in said hangers being inverted and lengthwise with the foot-rest, and in opposition to each other at forty-five degrees, more or less. One or more pieces of rawhide or any other flexible substance are inserted into said slots, and firmly secured therein with rivets, screws, or any suitable fastening device, the rawhide or other flexible substance to extend downward at angles of forty-five degrees, more or less, and in opposite directions, one toward the toe and the other toward the heel of foot-rest. The said rawhide is cut off parallel with the edges of the inverted slots of the hangers and of suitable length. The ends of said rawhide are then inserted into slotted axle-holders, and firmly secured therein with rivets, screws, or other suitable device, as in said hangers. Round-headed or other smooth-bodied screws are inserted into each side of axle-holders and at right angles with slots of the same, and of suitable length and size to be passed freely through the rollers, and the ends of said screws or axles to meet at or near the center of axle-holder, and of suitable length to allow the rollers to revolve freely thereon; and the objects of my improvements are, first, to provide a strong serviceable device for obtaining the curved course to the rollers; second, to simplify and thereby reduce the cost of manufacturing roller-skates. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a skate as it would appear if the two rollers nearest were removed; Fig. 2, an end view of an inverted truck, showing slight bend in flexible substance to the left, thereby canting the rollers; Fig. 3, an upright view of an inverted truck, showing the flexible substance in its natural position; Fig. 4, the

same as Fig. 2, except showing bend in flexible substance to the right; Fig. 5, a view of axle-holder, showing slot and axles in place.

Similar letters refer to similar parts throughout the several views.

To the under side of the foot-rest A are firmly attached, by suitable device at the required places, the hangers or controllers B. Into reversed diagonal slots *b''* of the hangers B are inserted a strip or strips, of rawhide or a combination of rawhide and rubber or any other flexible substance, C, and firmly secured in place by rivets or screws *b'*, and extending downward at forty-five degrees, more or less, and of the suitable length required and in reversed directions. The ends of said rawhide are then inserted into slots *d''* of axle-holder D, and firmly secured therein with screws or rivets *d'*. To the outer side of the slots of the axle-holders D are attached fingers or guards *d*, and to the outer side of the slots of the hangers B are attached stops or lugs *b*. At right angle through the hubs of axle-holder D a hole is drilled and threaded, and the said hole enlarged for a short distance to admit of part of the smooth body of axles F, as shown in Fig. 5. The axle-screws F are of the required length to receive rollers E and washers W, and the ends of said axles meet in or about the center *f* of the threaded hole *f'*, thereby binding each other and obviating the necessity of providing split pins, nuts, or other device to secure the rollers to the axles, and thus allowing facility for obtaining a neat and smooth end to axles. An inclination or tilt sidewise of the foot-rest A will cause the hangers B to oscillate, and the flexible substance C being firmly secured in diagonal slots *b''* of controllers B, protruding from said slots *b''* downward at about forty-five degrees and inserted into slotted axle-holder D in reversed directions with pressure of the rollers on the skating-surface, in combination with the tilt, will produce a bend in the flexible substance C, and at an angle of forty-five degrees, more or less, from the perpendicular, thereby compelling the rollers to assume a curved direction. The stops or fingers *d* of the axle-holder D and the lugs *b* of the controllers B touch when the flexible substance C is bent to a required

distance to prevent overstraining the said flexible substance and prevent the rollers from colliding with the foot-rest, as shown in Figs. 2 and 4.

5 I am aware that prior to my invention circular-running roller-skates have been in use, and I therefore do not claim the same, broadly; but

10 What I do claim as my invention, and desire to secure by Letters Patent, is—

A roller-skate in which diagonally-slotted

hangers B are attached to the under side of foot-rest A, and slotted axle-holders D are connected to said hangers by a strip or strips of rawhide or any other flexible substance or 15 combination of flexible substances, substantially as set forth.

OLIVER ARNOLD.

Witnesses:

WILLIAM B. FANNING,
JOHN E. DAY.

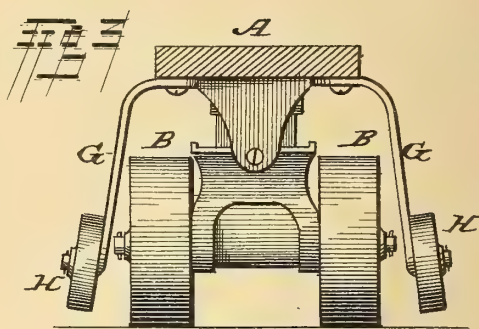
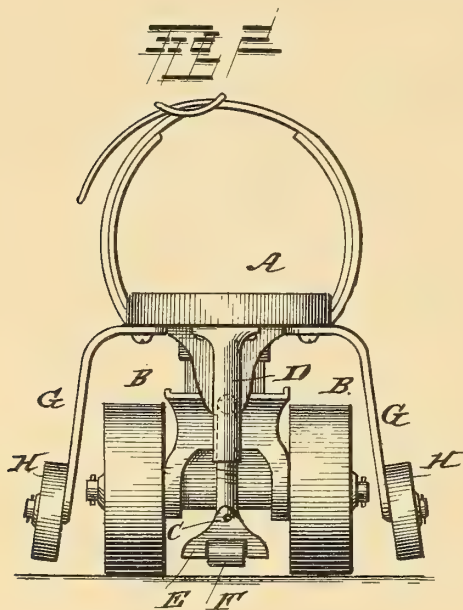
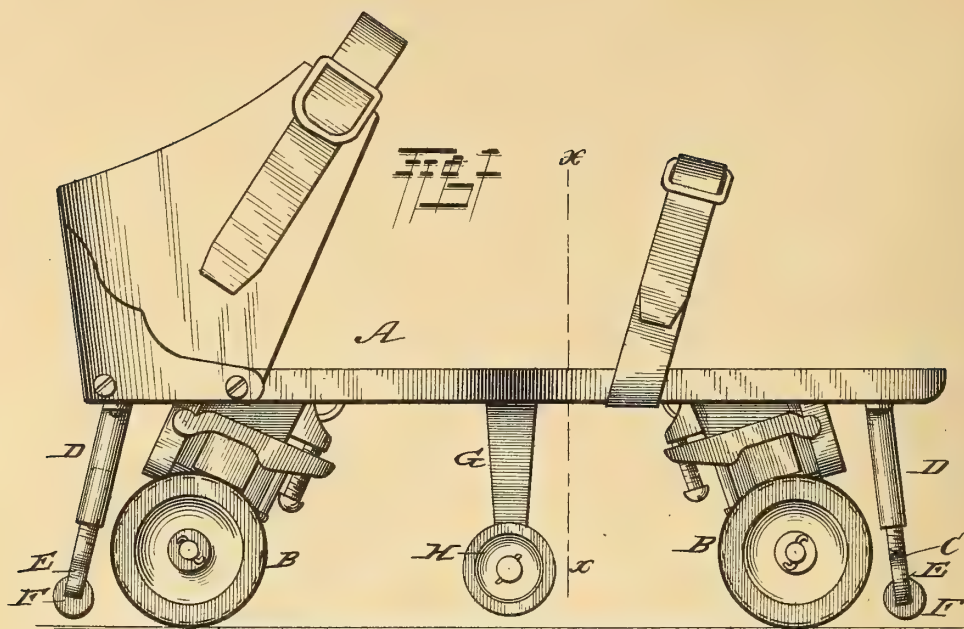
3087-4

(No Model.)

D. BRIX.
ROLLER SKATE.

No. 308,744.

Patented Dec. 2, 1884.



WITNESSES:

Fred. H. Dieterich.
Arthur L. Morell.

Dominicus Brix.
INVENTOR.

By Louis Bagger & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

DOMINICUS BRIX, OF GENESEO, ILLINOIS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 308,744, dated December 2, 1884.

Application filed April 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, DOMINICUS BRIX, a citizen of the United States, and a resident of Geneseo, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Roller-Skates; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of a roller-skate embodying my improvements. Fig. 2 is a front view of the same, and Fig. 3 is a cross-section through line *xx* in Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to roller-skates; and it consists in the improvements in the same which will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings, A denotes a roller-skate of any approved construction, having the usual rollers, B. I prefer to construct these rollers with a rubber tire slipped into a groove in the periphery of the rollers for the purpose of making them run noiselessly.

Fastened upon the front and back part of the skate, immediately in front of the front pair of rollers, and back of the hind pair of rollers, is a short metallic bar, D, the lower end of which has a cross-head, E, which may be pivoted and swiveled, at C, upon the lower end of the bar. This cross-head is provided with a rubber roller, F, and, if desired, this bar or pendant D may be made in two parts, one screwed into the other, so that the bar may be lengthened or shortened at will.

Fastened to opposite sides of the foot-plate are downwardly and outwardly projecting arms or outriggers G, at the lower ends of which are small rubber rollers H, so arranged that these rollers will project from a quarter to half an inch outside of the main rollers B, and lifted about one-fourth of an inch from

the floor or ground. It will be seen that the moment the ankle bends, so as to tilt the skate sidewise, these rollers or outriggers H will touch the floor, and thus prevent the ankle from being sprained by doubling over. It will also be seen that the front and rear brake-bars, D, will prevent the skate from tipping over forward or backward, and that the operator can come to a sudden stop at any time simply by tipping his skate, so as to bring either one of the brakes into frictional contact with the floor.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. As an improvement in roller-skates, the outriggers G G, placed on opposite sides of the foot-plate between the rollers, and provided with rollers at their outer ends, substantially as set forth.

2. As an improvement in roller-skates, the brakes consisting of the front and back bars or pendants, D D, having cross-heads E at their lower ends, provided with rollers F, substantially as set forth.

3. As an improvement in roller-skates, the brakes consisting of the extensible front and back bars or pendants, D D, arranged respectively in front of and back of the rollers B B, and provided with the hinged or swiveled cross-heads E, having frictional rollers F, substantially as and for the purpose shown and set forth.

4. The improved roller-skate herein shown and described, provided with the outriggers G, having rollers H, and having the front and back brakes, D, provided with cross-heads E, swiveled at C, and having friction-rollers F, the whole constructed and combined substantially as and for the purpose shown and specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

DOMINICUS BRIX.

Witnesses:

JOS. WEIMER,
E. C. MODERWEER.

(No Model.)

E. C. PHILLIPS.

ROLLER SKATE.

No. 309,089.

Patented Dec. 9, 1884.

Fig. 1.

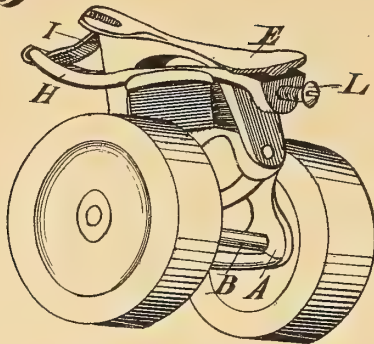


Fig. 2.

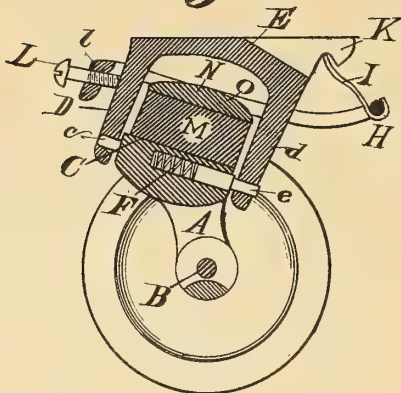


Fig. 3.

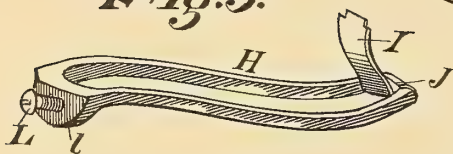
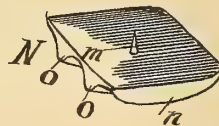


Fig. 4.



Attest

Joe W. Sims

A. W. Carruthers

Inventor
Edward C. Phillips

by Wood & Boyd
his Attorneys &c

UNITED STATES PATENT OFFICE.

ELWOOD C. PHILLIPS, OF RICHMOND, INDIANA.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 309,089, dated December 9, 1884.

Application filed May 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD C. PHILLIPS, a citizen of the United States, and a resident of Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to roller-skates.

The object of my invention is to provide a suitable hanger for connecting the rolls to the foot-board of the skate—first, so that it can be readily detached; second, so that the tension of the spring can be readily adjusted so as to obtain a uniform pressure upon the entire surface of the spring, all of which will be fully set forth in the description of the accompanying drawings, in which—

Figure 1 represents a perspective view of my invention; Fig. 2, a longitudinal vertical section; Fig. 3, a perspective view of the compressing-stirrup; Fig. 4, a perspective view of the upper spring-seat.

A represents a roller-bracket, which is represented as cored out with an opening in the center to lighten the metal.

B represents a shaft on which the rollers are journaled. It is rigidly secured to the arms of the hanger-bracket A.

C represents the bottom face of the bracket A; which forms the lower seat of the spring.

c represents a pivot which journals in one of the pendent arms, D, of the bracket E; which bracket is rigidly secured to the under side of the usual foot-board.

d represents the secondary downwardly-projecting arm, in which the detachable gudgeon *e* journals. This gudgeon *e* seats against a coiled spring, F, in a socket-board in the plate C. Pivots *c* and *e* form the transverse rocking-axes of the foot-board.

The object of the seating of detachable gudgeon or stub *e* upon the spring F is to allow the frame A to be detached from the hanger-bracket E by pressure applied upon the outer end of the gudgeon *e*, forcing it and the spring F inward until it is released from the journal-bearing in the pendent arm *d*, when the frame A can be readily detached from the frame E by the turning of the gudgeon *e* in its tapered journal. In order to allow of this movement, I usually make the gudgeon *e* of smaller di-

ameter than the journal-bearing in the pendent arm D. A modification of this mode of attaching the frame A to the frame E could be made by having both gudgeons seat upon springs; but one detachable and yielding gudgeon is sufficient for the purpose.

H represents a lateral-adjusting oscillating stirrup, preferably of link shape, the arms of which embrace the pendants D *d*.

I represents a spring-loop which is hinged at one end to the front arm, J, of the link H, and the other end rests in a seat, K, formed on the under side of the bracket E, which forms the front bearing-support of the stirrup H. The rear bearing-support is an adjustable screw, L, which taps in screw-threads formed in lug *l* at the rear end of stirrup H. The inner end of the screw bears against the pendent arm D and holds the stirrup H in position for supporting the spring.

M represents a rubber spring, which is formed of a rectangular piece of rubber, and rests upon the lower bearing, C. The upper bearing of the spring is formed of a loose plate, N, which is provided on the lower surface with flanges *n* to hold the spring in position.

Instead of employing the flanges *n*, a spud, *m*, may be employed, which is forced into the rubber to hold it in position.

O represents ribs formed on the upper face of the plate N, which ribs project upward between the arms of stirrup H.

In order that the plane of plates N and C may be maintained in a parallel position, the seat-plate N is made rounding upon its under side, so that it will rock upon the arm of stirrup H.

When it is desired to increase the tension of spring M, adjusting-screw L is turned inward. The point, pressing against the pendent arm D, draws stirrup H backward, lowering the front end, which hinges upon the flexible plate I, thereby lessening the space between the seat-plates N and C, thereby compressing the spring M. This method of adjusting stirrup H and seating the spring M upon the rocking plate N preserves the parallelism of the faces of seats N and C and gives a uniform or equal compression to all parts of the rubber spring. This is a very important advantage, for if the seat N were rigidly secured to the stirrup H

one side of the spring would be compressed more than the other, which causes the rubber to wear out of shape, and does not give proper yielding motion to adjust the foot-board as it is rocked sidewise by the wearer. The elastic or spring loop I is also advantageous, as it gives additional yielding motion to the foot-board, and renders the parts much less liable to be broken under the jars and strains to which the skate is subjected in use.

By constructing the hangers and connecting parts in the manner here shown, I produce a much more even and uniform motion of the spring, as well as securing a more elastic support for the rollers.

An inferior modification of my device would be to have the loop I hinged to both the hanger E and stirrup H. This modification, in combination with the loose adjusting seat-plate N, would maintain the parallelism of the spring-seats, but would not secure as good a yielding connection of the parts as the form shown in the drawings.

I do not wish to confine myself to the forms of spring for supporting the detachable gudgeon *e*, as a rubber cushion might be employed in lieu of the spiral spring.

Another modification of my invention would be to provide forked hangers D *d* with the reciprocating stirrup H, placed between the forks of the hangers and supporting the adjustable seat-plate N; but this modification would require a larger amount of metal to obtain the same strength.

I have shown in the drawings but a single hanger-frame for journaling, say, the front pair of rollers to the skate-board. It is obvious that two such hangers and journal-supports would be required—one upon the front and the other upon the rear end of the skate-board, in the usual manner.

I claim—

1. In combination with the axial bracket A, the detachable gudgeon *e*, spring F, and gudgeon *e*, for detachably journaling the hanger-frame E to the bracket A, substantially as specified.

2. In combination with the detachable hanger-frame E, a roller bracket-frame, A, and hinged stirrup H, adjustable spring-seat N, and stationary seat C, substantially as specified.

3. In combination with the bracket A and seat C, the hanger-frame E, adjustable spring-seat N, and stirrup H, detachably secured to said frame E by means of a yielding loop, I, substantially as specified.

4. In combination with the bracket-frame E, having the pendent journal-arms D *d*, the stirrup H, surrounding the said arms, adjusting-screw L, and loop I, for adjusting the tension of the spring by the lateral movement of the stirrup H, substantially as specified.

In testimony whereof I have hereunto set my hand.

ELWOOD C. PHILLIPS.

Witnesses:

ROBERT ZAHNER,
JOHN S. ROEBUCH, Jr.

809.253

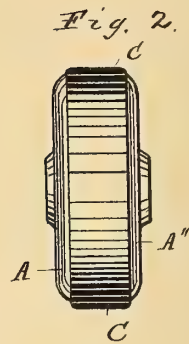
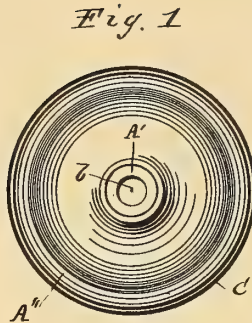
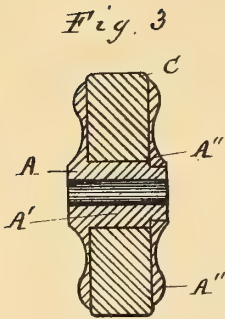
(No Model.)

S. R. RUST.

WHEEL FOR ROLLER SKATES.

No. 309,253.

Patented Dec. 16, 1884.



WITNESSES
Morton Toulmin
W. H. Sholes

INVENTOR
Solon R. Rust
A. W. Morgan & Son
his Attorney's

UNITED STATES PATENT OFFICE.

SOLON R. RUST, OF PINE MEADOW, CONNECTICUT.

WHEEL FOR ROLLER-SKATES.

SPECIFICATION forming part of Letters Patent No. 309,253, dated December 16, 1884.

Application filed April 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, SOLON R. RUST, a citizen of the United States, residing at Pine Meadow, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Wheels for Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in wheels for roller-skates, the object of which is to furnish a durable wheel for this purpose which will not slip. This object is attained by the devices illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation. Fig. 2 is an elevation. Fig. 3 is a transverse section on the line *xx* of Fig. 2.

20 The letter A indicates a metal plate, having on one side a central portion, A', extending outwardly to form a hub, which is perforated by the opening B to receive the axle of the skate. The hub A' is slightly reduced at one
25 end in order to receive the plate A'', which is provided with a central opening, *b*, for that purpose. The space surrounding the hub A' and between the plates A' and A'' is filled in with paper, either in pulp or in circular pieces,

C, between which some adhesive cement has
30 been placed. The two plates are then firmly compressed together, so that the paper intervening between the plates A A'' when hard forms a solid mass. The periphery of the wheel is then coated with glue or other suitable cement, and flour of emery sifted over it;
35 or, if the paper material is pulp, the emery may be incorporated with it while in a plastic state. As the end of the hub A' extends a little beyond the outer surface of the plate A'',
40 this may be riveted or expanded during the act of compressing, and in this manner make a firm connection between the hub and plate.

Having described my invention, what I desire to secure by Letters Patent, and claim, is— 45

In roller-skates, a wheel composed of two metal plates connected by a hub adapted to receive an axle, surrounded by compressed paper having a coating of flour of emery, as described, and for the purposes set forth. 50

In testimony whereof I affix my signature in presence of two witnesses.

SOLON R. RUST.

Witnesses:

O. S. THOMPSON,
JOSEPH W. DREYNWÖRZ.

(Model.)

S. R. & A. E. RUST.
ROLLER SKATE.

No. 309,254.

Patented Dec. 16, 1884.

Fig. 1

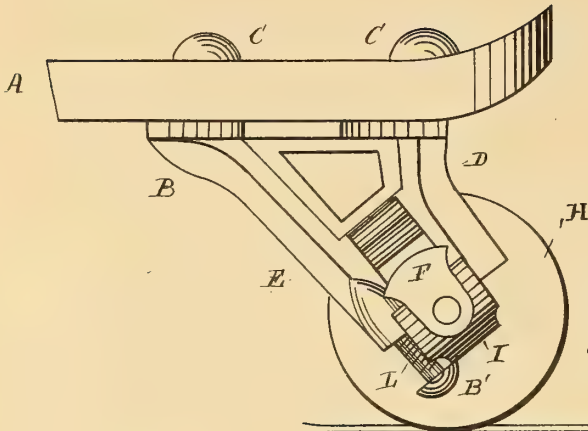


Fig. 2

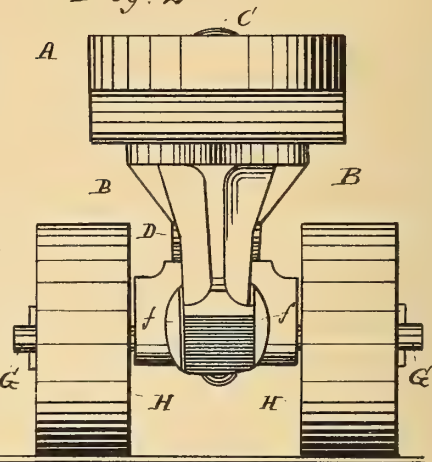


Fig. 3

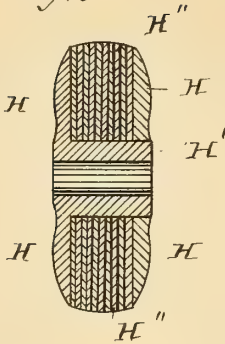


Fig. 4

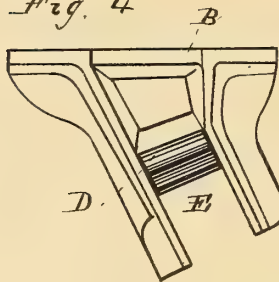


Fig. 7

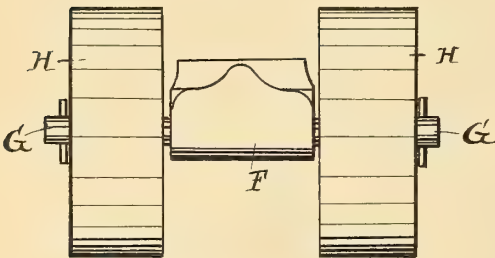


Fig. 6

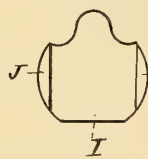
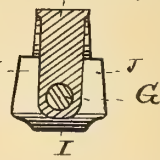


Fig. 5



WITNESSES

Morton Toulmin
H. Rickford

INVENTORS

Solon R. Rust
Arthur E. Rust.

A. W. Morgan & Son
Attorneys

UNITED STATES PATENT OFFICE.

SOLON R. RUST AND ARTHUR E. RUST, OF PINE MEADOW, CONNECTICUT.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 309,254, dated December 16, 1884.

Application filed May 1, 1884. (Model.)

To all whom it may concern:

Be it known that we, SOLON R. RUST and ARTHUR E. RUST, citizens of the United States, residing at Pine Meadow, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification, reference being had therein to the accompanying drawings.

15 This invention relates to improvements in roller-skates, and has for its object to furnish a compound roller in such manner as to prevent slipping in a lateral direction, to provide means whereby circles are more easily turned, the ankles are relieved from strain, and an even rocking motion is obtained. These objects are attained by the mechanism illustrated in the accompanying drawings, forming a part of this specification, in which—

20 Figure 1 is a side elevation of the front end of a skate with one of the rollers removed. Fig. 2 is an end elevation. Fig. 3 is a sectional view of one of the compound rollers. Fig. 4 is a detached view of the standard B. Figs. 5 and 6 are detached views of the yoke I, Fig. 5 showing axle and slide in section. Fig. 7 is a detached view of the rollers H and slide F.

30 The letter A indicates the foot of the skate, which may be made of any suitable material. B is a metal standard secured to the bottom thereof by means of screws or bolts C. This standard has a diagonal slot, E, in bottom of which is a rubber cushion, D, which bears against the upper portion of a slide, F, fitted to the slot E, and provided with lugs f, which are intended to maintain the slide in the proper position within the slot, and at the same time permit its movement up and down within the slot. The slide F has an opening, through which is inserted and secured the axle G, upon which the rollers H revolve. A yoke, I, having lugs J, which extend over the sides of the standard B, is placed over the bottom and the lower sides of the slide F and a little way up into the slot E. A screw, L, which is tapped

into the standard B, having a head, B', extending a little over the bottom of the yoke I, furnishes the means of adjusting the movement of the slide F and regulating the tension of the rubber spring or cushion D. This method of securing the rollers to the foot of the skate permits of a rocking motion for the purpose of turning circles, and also relieves the strain on the ankles of the person using the same. The proper tension is also secured, as well as an even rocking motion.

The rubber spring or cushion may be made in the form of a square block or of any other shape adapted to secure the ends in view.

60 The roller H is formed of two metal plates, H, fitted to a box, H', which answers the purpose of a bearing for the axle, and may be a casting forming a part or both of the plates H.

The space between the plates H and around the box H' is to be formed of compressed paper or muslin, H'', the periphery of which is to be coated with flour of emery, to prevent the skate from slipping in a lateral direction.

70 Having described our invention, what we desire to secure by Letters Patent, and claim, is—

1. In a roller-skate, the foot A, in combination with metal standard B, having a diagonal slot, E, adapted to receive a sliding block, F, provided with axle G and rollers H, as described, and for the purposes set forth.

2. In a roller-skate, the standard B, having diagonal slot E, in combination with the slide F, having axle G and rollers H, as described, and for the purposes set forth.

3. In a roller-skate, the standard B, having diagonal slot E, the yoke I, the slide F, the axle G, and the rubber D, in combination with the screw L, as described, and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

SOLON R. RUST.
ARTHUR E. RUST.

Witnesses:

O. S. THOMPSON,
JOSEPH W. DREYNWÖRZ.

(No Model.)

G. A. WELANDER.

ROLLER SKATE.

No. 309,501.

Patented Dec. 16, 1884.

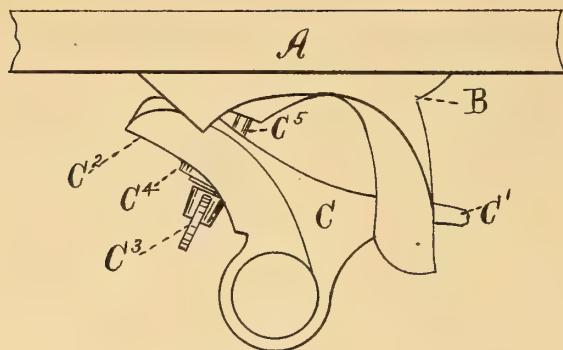


Fig. 1

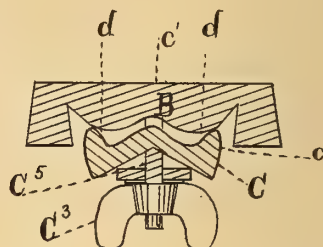


Fig. 2

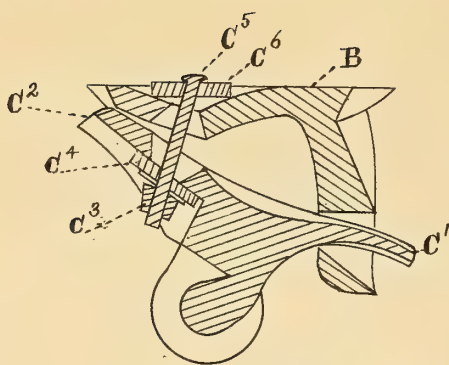


Fig. 3

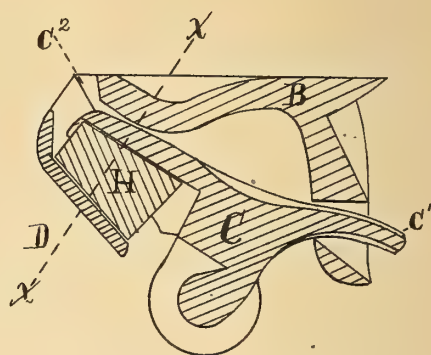


Fig. 4

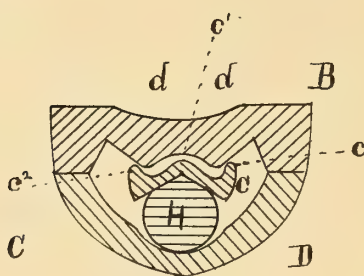


Fig. 5

WITNESSES
Thos E Dudley
William Eason

INVENTOR
Gustave A Welander

UNITED STATES PATENT OFFICE.

GUSTAVE A. WELANDER, OF CHARLESTOWN, ASSIGNOR TO THOMAS E. DUDLEY, OF BOSTON, MASSACHUSETTS.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 309,501, dated December 16, 1884.

Application filed March 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE A. WELANDER, of Charlestown, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to guidable roller-skates, the object being to so construct the bearing-surface of the truck-frame upon the base-piece of the skate-body that the guiding movement shall be the easiest possible consistent with a reliable support for the foot of the user. This object I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of one of my truck-frame housings. Fig. 2 is an end section, showing the bearing-surfaces between the movable housings and fixed housings. Fig. 3 is a longitudinal section of the housings, showing a modified connection between the fixed and movable housings. Fig. 4 is a longitudinal vertical section, showing the housings with the fixed and movable housings connected by an elastic cushion, H; and Fig. 5 is a section taken on line *x x* of Fig. 4.

In the drawings, Fig. 1, A represents the body of the skate, and B in all the drawings a fixed housing, which is securely fastened to the body A of the skate. This fixed housing B is made in the shape shown in the drawings, having a depression, *c'*, Figs. 2 and 5, and protuberances *d d*, Figs. 2 and 5, upon which corresponding parts, *c c*, of the moving housing C bear, so that an uneven pressure received from the foot of the user will cause the moving housing—that is, the housing that supports the truck—to go to the right or left. The moving housing or truck-frame C is held to the fixed housing E by some suitable elastic connection, one form of which is shown in Figs. 1, 2, and 3 and another form in Figs. 4 and 5. The first form of connecting device consists of a screw bolt and nut, *C⁵ C³*, and two elastic washers, *C⁶ C⁴*. (See Fig. 3.) The other form of connection consists of a hood, D, Figs. 4 and 5, and an elastic compression-

piece, H, made in the form of a cone or wedge shape, as shown in Figs. 4 and 5.

By forming the bearing-surface of the housing B in corrugations, and making the contacting surface of the movable housing C as shown more particularly in Fig. 2, I obtain a lateral sliding motion which makes the truck perfectly guidable, and gives no shock to the user in turning from one direction to the other. I am aware that skates have been made in which the lower housing had two lateral points of bearing, but in turning only one of them would be in contact, so that in reversing the direction the other point will come into contact and give a shock to the user. It will readily be seen that by this means an increased oscillating movement is allowed, as the lateral movement at the forward end is a gliding one—that is, the housings slipping one on the other on the corrugated surfaces, while the rear bearings of the housings are confined to a single point of oscillation. It will further be seen that, by means of a free and movable piece and the different methods shown of uniting the same—that is, by means of the hood and elastic cushion combined, or by the screw-bolt, nut, and elastic washer—I obtain an elastic truck—that is to say, a truck that, by allowing the housing-piece C free action to glide upon the inclined surfaces of the protuberances D D both longitudinally and laterally, (limited and confined by means of the spring mechanism shown,) is very comfortable for the foot of the user, and allows easy movement and smoothness of action.

I claim—

In a roller-skate, the combination of the fixed housing-piece B, having a depression, *c'*, and rounded protuberances *d d*, with the movable housing C, having rounded projections *c c*, the hood D, and the elastic cushion H, substantially as described, and for the purpose set forth.

GUSTAVE A. WELANDER.

Witnesses:

WILLIAM EDSON,
THOS. E. DUDLEY.

(No Model.)

C. E. WARDWELL.

SKATE.

No. 310,923.

Patented Jan. 20, 1885.

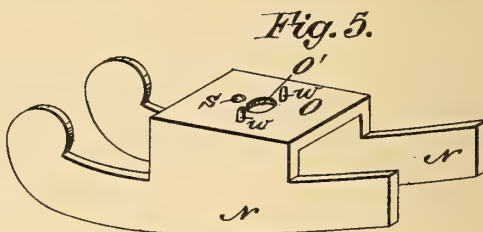
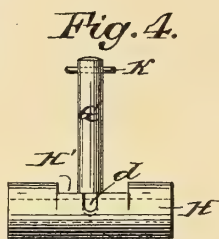
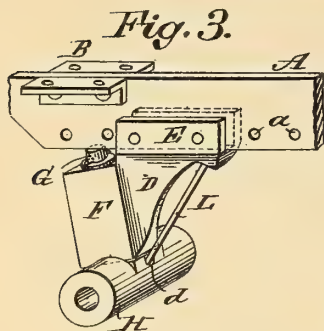
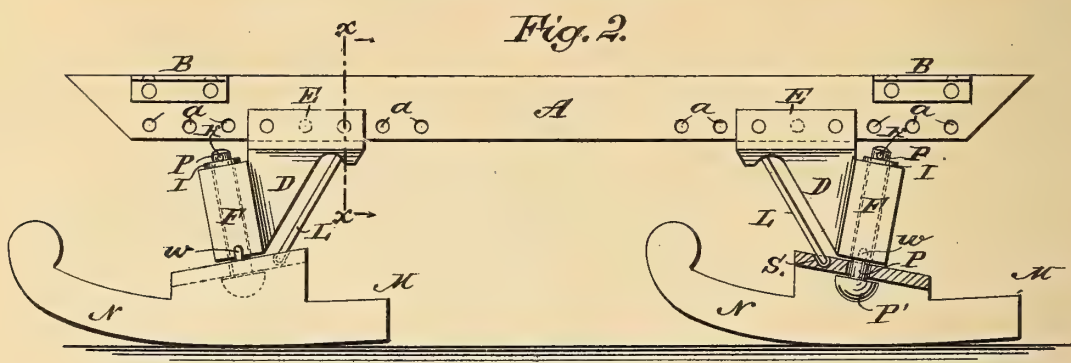
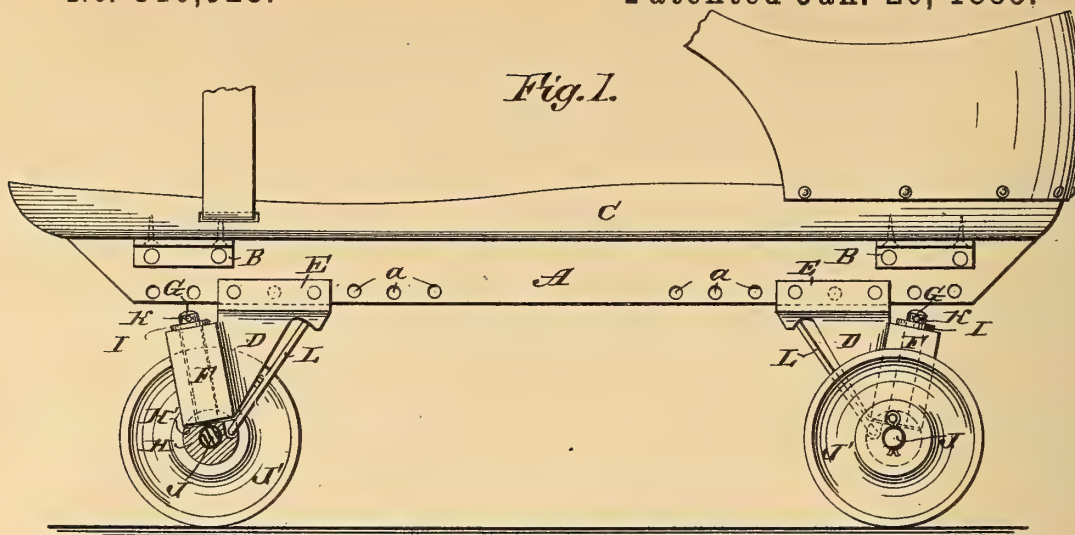


Fig. 6.



WITNESSES:

H. Beyer
C. Sedgwick

INVENTOR:

C. E. Wardwell

BY *Munn & Co*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES E. WARDWELL, OF HOLYOKE, MASSACHUSETTS.

SKATE.

SPECIFICATION forming part of Letters Patent No. 310,923, dated January 20, 1885.

Application filed May 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. WARDWELL, of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and Improved Skate, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved skate which can easily be adjusted as a runner-skate or roller-skate.

The invention consists of the combination of parts and their construction, substantially as hereinafter fully set forth and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improved skate, showing it provided with rollers. Fig. 2 is a side view of the bar, showing it provided with the runners, one of which is shown in section. Fig. 3 is a perspective view of one of the knees. Fig. 4 is a face view of one of the sleeves for holding a roller-axle. Fig. 5 is a perspective view of one of the runners. Fig. 6 is a cross-sectional view on the line *x x*, Fig. 2.

On a flat bar, A, angle-irons B are riveted or otherwise securely fastened on both surfaces at the front and rear ends, in such a manner that the top flanges of the angle-irons will be flush with the top edge of the bar A. Along its bottom edge the bar A is provided at each end with a series of apertures, *a*. The bar A is placed against the under side of a foot-plate, C, of the usual construction, and is held in place by screws passed through the top flanges of the angle-irons B into the under side of the foot-plate. On the bar A a knee, D, is held at each end, which knees are each provided in the top piece, E, with a longitudinal groove for receiving the bottom edge of the bar A. On the upright edge of each knee a socket-piece, F, is formed which is adapted to receive a spindle, G, projecting upward from a sleeve, H, adapted to receive a shaft, J, on the ends of which rollers J' are mounted. A washer, I, is placed on the upper end of the spindle G, and a pin, K, is passed through the upper end of the spindle above the top of the socket-piece F.

The sleeve H is provided in its top with a

recess, H', into which the lower end of the socket-piece F passes, the recess being slightly longer than the lower end of the socket-piece, to permit the spindle G and the sleeve H to turn slightly on the longitudinal axis of the socket-piece.

A spring wire or rod, L, secured to the inner end of the top of the knee, extends down into a recess or notch, *d*, in the sleeve H. The knees are fastened on the bar A, as shown in Figs. 1 and 2. They can be fastened a greater or less distance from the ends of the bar A, as this bar is provided with a series of apertures, as described, through which apertures the pins, screws, or rivets for holding the knees on the bar A are passed, as shown in Fig. 6.

The runners M are formed of two runner-blades, N, united by a top plate, O, provided with a central aperture, O', through which a spindle or pin, P, having a head, P', is passed in such a manner that the head P' is on the under side of the plate O. A pin, K, is passed through the upper end of the pin or spindle P, above the top of the socket-piece, F.

The lower end of the spring-wire L can pass into a socket or recess, S, in the top of the plate O.

The skate can easily be changed to a roller-skate or runner-skate, as may be desired, and the rollers or runners can easily be placed a greater or less distance apart.

The spring-wire L, acting on the sleeve H or the plate O, always straightens them when the foot is lifted—that is, brings them at right angles to the bar A—and the springs also prevent the sleeve H and the runner-plates from clicking or rattling.

The plate O, connecting the two runners N, is provided with upwardly-projecting pins *w* at each side of the said aperture O', or with a pin behind the aperture O', which pins prevent the runners from swinging too far, the same as the recesses H' in the sleeves H limit the rocking or swinging of the sleeves. In place of providing the pins *w*, the front and rear of the plate can be bent up to form flanges or stops serving for the same purpose as the pins *w*.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a skate, the combination, with the foot-

plate bar A, of the knees D, held detachably on the bar A, and provided with socket-pieces F, spindles held in the socket-pieces, and rollers or runners held on the spindles, substantially as herein shown and described.

2. In a skate, the combination, with the knee D, having a spring rod or wire, L, of a spindle held to turn in the knee, and a sleeve or runner-plate held on the lower end of the spindle and provided with a notch or recess for receiving the lower end of the spring-rod L and with a recess or notch to limit its movement upon the spindle, substantially as herein shown and described.

3. In a skate, the foot-plate bar A, and the knees D, having spindles and the spring-rods L, in combination with the runners M, with their connecting-plates O, provided with central apertures, O', sockets S, and pins or studs w, entering sockets in the lower ends of the knees, substantially as and for the purpose set forth.

CHARLES E. WARDWELL.

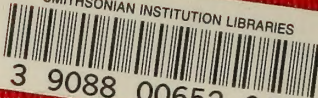
Witnesses:

H. C. WALTER,
T. J. SMALL,
E. H. MUNN.





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